

JAN 22 1924

# AUTOMOTIVE INDUSTRIES

## The AUTOMOBILE

Vol 30  
Number 3

PUBLISHED WEEKLY AT 239 WEST 39th STREET  
NEW YORK, JANUARY 17, 1924

Thirty-five cents a copy  
Three dollars a year



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# AUTOMOTIVE INDUSTRIES

## The AUTOMOBILE

VOL. L

NEW YORK—THURSDAY, JANUARY 17, 1924

No. 3

## Each Factory Department Must Be Coordinated with Others

Team play rather than brilliant work by individual specialists makes success more certain. Efforts of each must meet needs of others. Job for chief executive.

By W. L. Carver

**T**RANSFORMATION from a few individual enterprises to an industry ranking with steel and railroads has been chronicled in twenty years of automotive progress. The change has been from the spectacular one-lunged "chugger" to a commodity owned by one person out of every eight which has permanently shifted the trend of national economics.

In the light of individual experience these twenty years of development apparently have been altogether an evolutionary process, but as a basis of abstract comparison, steam and electric power and transportation developments, although regarded as modern institutions, have behind them commercial histories of a century and fifty years, respectively. Most of the industries which form the automotive background measure their experience in similar terms of time.

Growth has been so rapid, engineering, production and commercial conditions have veered so suddenly, that the executive has been in a constant state of readjustment. First one phase of the business and then another has occupied the foreground. The time-honored picture of the old-fashioned, deliberate president or manager in his well-ordered, serene surroundings, has been lost in the effort to withstand pressure from every conceivable angle.

Methods have changed, not once, but hundreds of times, but although methods may change, principles do not. An occasional inventory of methods and policies is important in the same degree as the physical inventory which is now regarded as being absolutely essential at least once in each fiscal year.

More than often methods and policies are the prod-

uct of conditions. Offhand it would seem that the reverse is the case, but careful analysis usually reveals that current methods are to a large extent copied from those adopted by the first executive to meet a trend or condition.

Just at present the feeling seems to be that all commercial aspects of the automotive field are bound up in the sales department. We hear of this and that company looking around for a chief executive who is a salesman, meaning one who has been successful in marketing a line and, therefore, should be able to maintain a place in the sun for the prospective connection. While this idea is the outgrowth of steadily intensifying competition which has come with the distribution of the automobile as a commodity, it is also a symptom of a basic condition.

**W**HEN small individual enterprises constituted the field, one man could carry all of the details of his business around with him. Usually he had an idea for an automobile and some sort of elastic drawings which his shirt-sleeves contact with his own shop or a contract shop enabled him to translate into a car. Distribution took care of itself almost automatically. Prospects seeking the novelty of horseless transportation exceeded in number the supply of automobiles under the old-fashioned hand production methods. The proud owner was lucky if he could travel thirty miles without winding a chain around himself or taking the engine down piecemeal. But the world decided it wanted horseless transportation and the collection of small enterprises was merged into the industry of today.



Very soon the business divided into logical departments, such as engineering, production and sales with the later addition of others, such as research, experimentation, inspection, equipment, design, purchasing, advertising and service. Demands have been so great and progress so rapid that each of these departments has been more than occupied with the job of keeping up with the procession.

### Specialization Promotes Isolation

As a result, it may be said that the industry has produced a race of specialists, most of whom are absorbed in the workings of some one department. Specialization usually promotes isolation. Isolation within the structure of a business, if it does not destroy, always hampers or prevents the fullest growth of that business. This same quality of specialization has had much to do with the tremendous strides of the industry, but it is a question whether the cooperation accompanying the most outstanding cases of superior executive management has not been a bigger factor.

The ideal arrangement, it would appear, is one in which the efforts of the departmental specialists are guided towards a common end by the chief executive who impresses the complete picture of the company's effort upon each of them.

This constitutes a form of cooperation in which:

The engineer is made to realize that engineering must be commercial in every sense.

The production department is taught that production is more than a matter of quantities.

Inspection is not a process of clogging up the whole works by rejections.

Sales work is more than the mere unloading of large quantities of cars.

Service is not measured by the volume of repair parts which have been shipped and paid for.

Purchasing is not super-engineering.

### General Knowledge Essential

Numerous sad examples of the dangers of over-specialization may be recalled by any one who has been associated with the industry over a period of years. Count the number of motor car companies formed by former successful branch district or room sales managers which have gone into bankruptcy. How many engineers have formed companies which went the same way? They are about as numerous as the cases in which purely financial interests who thought a motor car business would be a fine way of making excellent profits have learned an expensive lesson.

These are glaring examples of the dangers of over-specialization. They are the more glaring because final authority in these cases was in the hands of a specialist. Each type of specialist executive failed to appreciate the details of vital commercial importance which lay outside of his own field of training and experience.

Another indication of the same tendency can be observed at meetings of men who are specialists in some one department of the industry. An observer having no knowledge of the automotive industry might leave one of these meetings feeling that he had attended a session of the men who were carrying the entire industry.

This may seem good psychology but more searching thought reveals that each of the departments has shown a surprising lack of knowledge of the workings of all other departments. In any gathering of specialists, predominant thought naturally is directed to their own particular work. On the other hand, lack of concrete knowledge of the full scope of the individual's business connection is one indication that something is lacking in

the way of a leadership which produces coherent effort.

Some of these specialists emphasize the isolation of the various departments. Instead of a well-oiled coordinating machine, the picture shown is one of detached, self-centered units struggling in different directions, all hoping to reach the same point. Engineers collectively may decry the engineering efforts of the purchasing agents. They also may hope that the sales department will give them time for the perfection of a design before driving the thing into production.

Service men may pray fervently that the engineers will "stop dreaming in their splendid isolation" and get down to earth with a design that incorporates the needs of the dealer and customer as well as the service department. Production men may bewail the machining difficulties of the engineer's designs. Although sales managers do not get together like the heads of other departments, they may ask themselves, "Why can't we get closed bodies in the fall and why can't we get open bodies in the spring?"

### Management Has Large Responsibility

Much of this may be a sympathetic reaction arising from common interests. Nevertheless, the individual idea must precede the collective. Discussions of departmental associations are predicated largely upon individual experience which leads to collective opinion. When the members' individual opinions are not founded upon a sound knowledge of his company's policy, the collective opinion is likely to lead to abstractions not conformable to individual company policy. Too often talk of what the industry should do is based on myopic opinions rather than upon a thorough appreciation of every factor from the raw material to the customer.

Not all the blame for this situation lies with the departmental executive who must be proud of his work when he gets up and explains it, but with the management which directs his efforts. The question arises whether the management is directing the efforts of all departments towards a well-rounded general policy or spending most of its time pounding dealers on the back, which should be the function of the sales rather than the executive department.

Incidentally, some mighty fine object lessons would be developed if some of the general executives were to attend departmental association meetings. To the individual "what the industry should do" should be of such import when compared with "this policy or idea is or is not feasible for my company for these specific reasons." Any trend of thought is valuable only in its applicability to the commercial welfare of the individual companies which make up the industry.

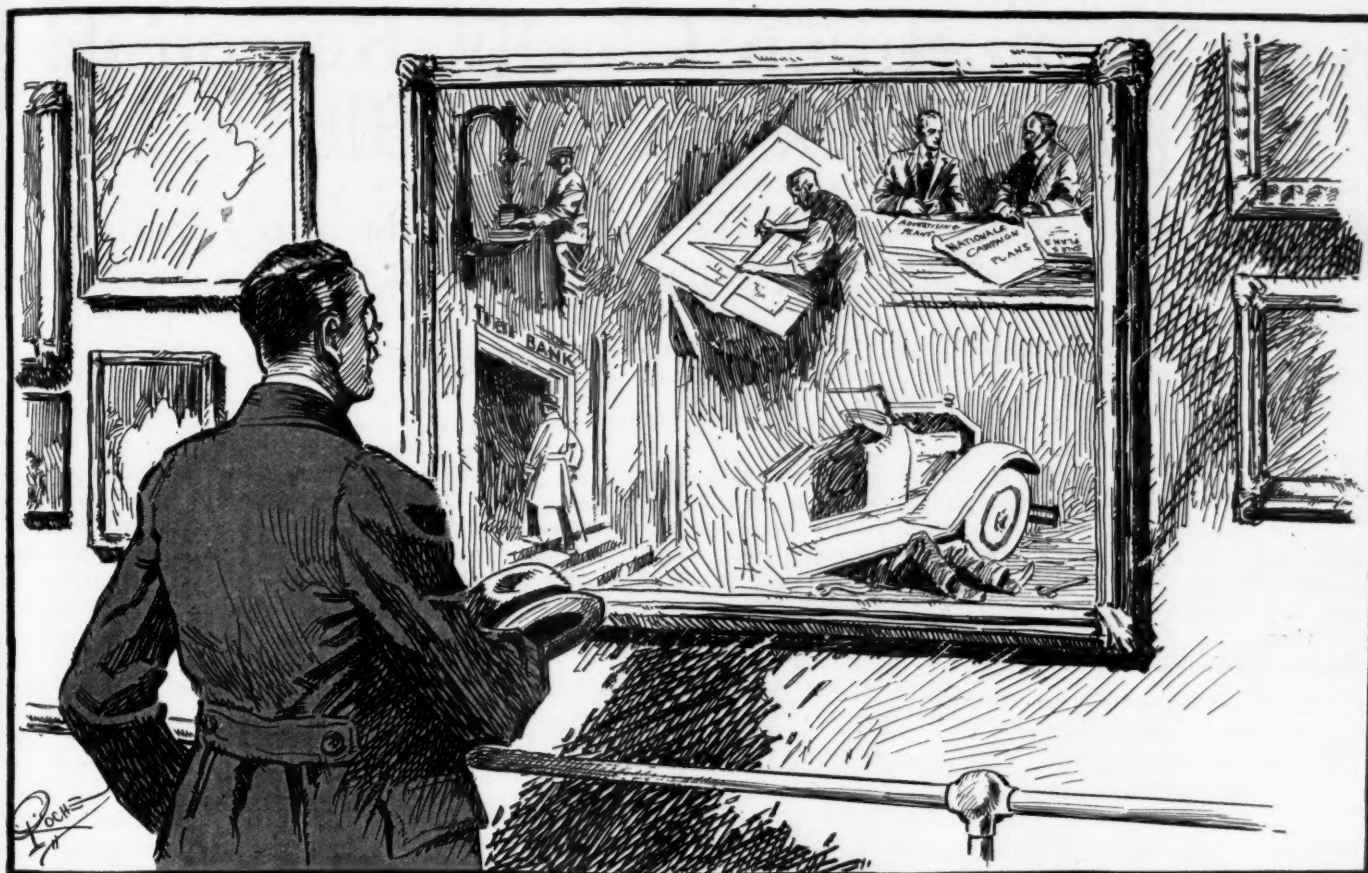
### Faults Often Hidden

Bearings in the machinery of business usually run hot at points which are thought to be functioning smoothly because of long use. The hazard mentally set up in advance as the source of worry usually is surmounted with practically no trouble, while an everyday detail will come out of its obscurity and almost wreck the whole program. A resumé of personal experience will confirm this characteristic in many cases. Realization of this possibility is increasingly pertinent to the present situation, particularly when underlying influences are considered.

The sales problem has become more and more acute as the automobile has passed from the novelty to the commodity stage. By the same token, the characteristics of the individual article which tend to keep it sold take rank with its sales appeal. Distribution is so widespread that success may not be attained on a head-lined feature.



## It Is the Chief Executive's Job to Coordinate All Departments



*The engineer must think about production and service limitations; the production manager must consider costs and overhead expense; and so on down the line. Upon the general executive falls the responsibility for coordinating all activities, but his task is lightened materially when the individual specialists constantly have in mind a clear picture of the business as a whole*

Just as with other commodities, the considerations of price, quality, service and distribution are becoming paramount. Widespread demand and distribution of the commodity results in keener competition which is usually followed by decreased unit profits with the necessity for more efficient management.

True intensive management is not the exclusive function of the sales department but of every branch of the business. Just as the car will have to be sold on the combination of all contributing factors so will the commercial ability of the organization be dependent upon balanced ability in every department. Instead of featured engineering or sales plan, the organization will have for sale balanced quantities of engineering, production, sales and service, each in its proper proportion and relation to all of the others. To accomplish this end, the head of each department and his lieutenants must be able to think not only in terms of his own specialty but of the balance between his functions and those of every other department.

### General Executive Must Coordinate

When left to himself, the natural tendency of the departmental head is to think in terms of his specialized experience. It is up to the general executive, therefore, to constitute himself the center about which every contributing department rotates. His chief job is the anticipation of high or low points which may throw the whole machine out of balance with resultant loss of power and destructive vibration.

The salesman, unless he has the ideal of selling more than mere cars, is no more fitted to be at the head of an

organization than the stockkeeper. The same is true, in somewhat lesser degree, with the engineer, the purchasing agent or the master mechanic. Isolated specialized departments have always failed to give the organization as a whole the impetus and definite personality that go with the close coordination of broad-gaged management.

### Success Achieved by Balanced Efforts

Tremendous strides have been made in the industry as a whole, but scrutiny will reveal that the backbone of this advance has been made up of the closely knit companies which have had the ideal of balancing the efforts of every internal department. These companies have personality as a whole.

Their dealers and customers know that they are dealing with an entity which has the entire picture of commercial effort in mind. The executive at the head has "his ear to the ground" in his own organization as well as out in the field. He realizes that each department has some special function to perform but he realizes also that as a pure specialty, this function contributes but little to the commercial success of the enterprise.

It is only when these specialized functions are bound together in a coherent, balanced whole, each tuned by the needs of all the others, that real commercial success is fostered. When each individual in a company is imbued with a determination to help his fellows turn out a good product and keep it sold at a consistent profit, commercial success will be measurably sure and in the end this is the sole aim and end of any organization.

# Keen Competition Chiefly Responsible for Truck Industry Ills

Remedies are easy to prescribe but difficult to apply. Small companies can live by selling in localized areas.  
Would lower cost and improve service.

By James Dalton

**E**VERY consideration of "what's the matter with the truck business?" works around eventually to the retailing of commercial vehicles. Obviously, something is wrong, except with a very few companies. It is easy enough to determine in a general way what it is and to prescribe remedies, but exceedingly difficult to apply them.

Three or four evils stand out like sore thumbs:

1. Ruinous trade-in allowances.
2. Ridiculous credit terms.
3. Vehicles sold without adequate study of purchasers' needs.
4. Complete neglect of service requirements.

If these conditions could be remedied, the merchandising of commercial vehicles would immediately be placed on a relatively sound basis, but as the situation stands today remedies must be applied in homeopathic doses and the cure will be painfully slow.

Neither manufacturers nor dealers are altogether to blame. Present difficulties are largely the result of competition. Too many people are trying to do exactly the same things in the same way. The company with small resources and with a small dealer organization is trying to compete along parallel lines with the company which has virtually unlimited capital and a branch or dealer organization covering the entire country.

Small producers of heavy duty vehicles with limited resources complain bitterly because their retailers have to "trade their heads off" to make sales in competition with branches or dealers representing the biggest producers in this field. This denunciation of what is held to be an indefensible business practice accomplishes nothing.

## Sales Are Chief Objective

The most powerful companies in the field have framed their business policies for their own benefit and not for the benefit of their competitors. Their methods may be more or less "brutal," but the policy has been maintained because it has been found to bring the largest volume of sales.

The companies which are suffering from this competition find it galling, but they will have to adjust themselves to it rather than expect it to be so framed that they will have a better chance to enlarge their sales.

**They are not defenseless, for they have in their hands weapons which, if employed properly, will enable them to fight successfully.**

Methods must be changed to meet changing conditions, and conditions have changed rapidly in the truck field. Until recently it was taken for granted that

a company must do business on a national basis if it hoped to succeed. The best thought of the industry now is that sales must be sought in a circumscribed area if small companies are to live. The two most important immediate results would be:

1. Much lower merchandising costs.
2. High-class factory service.

Reduced selling costs would enable these smaller companies to compete successfully with the largest ones in trading allowances, either through branches at strategic points in the territory selected or through strong, factory backed dealers.

Better service would make possible the repeat orders upon which ultimate success must depend.

Happily there is a strong trend toward circumscribed markets among the smaller concerns in the commercial car branch of the industry. A gradual, if painfully slow, improvement in conditions may be expected, therefore.

## Opinions Expressed Frankly

These thoughts were in the minds of some of the men who attended the meeting of the truck manufacturers who are members of the National Automobile Chamber of Commerce which was held in New York last week. They were not voiced in quite such plain language by the speakers, but they were expressed privately, and it was not difficult to find them underneath the words of those who discussed the various problems considered.

No one attempted to gloss over the evils which are bound up in the merchandising of motor trucks, especially those of the heavy duty variety. The question was brought up first by S. G. Rosson, vice-president of the Commercial Credit Co. of Baltimore, who had been assigned the subject, "What Can Be Done to Improve the Standard of Truck Paper?"

Proceeding from the premise that a great volume of truck paper issued today is considered undesirable by finance companies, Mr. Rosson held the factories partly responsible. He took the position that they should stand back of their products until they are properly and permanently sold, and that they should assume the burden of selling trucks which have been repossessed because purchasers failed to meet their installments.

The average buyer, he said, ignorant of the costs of motor truck operation, usually puts into his down payment about all the funds he has, with the expectation of being able to make a living out of the vehicle and pay for it at the same time. When he finds this can't be done, it becomes necessary to repossess the vehicle.

Mr. Rosson contended that the prospect should be given all the facts available about the prospects of success in the operation of a truck in the field he contem-



plates entering, and then sold one of the right capacity. Sales should not be made unless the prospective purchaser has a reasonable chance of success. Neither buyers nor dealers should be left to shift for themselves, he asserted, and if the factories display a reasonable degree of interest in their welfare they will be able to build up a more responsible sales organization as well as more substantial customers.

Most of Mr. Rosson's remarks concerned that class of buyers who operate individual trucks. He said their paper was less safe than that of passenger car purchasers, because the latter do not expect the vehicle they buy to pay for itself out of operating revenue.

#### Better Credit Methods Urged

He pointed out that capital is directed into the safest channels available, and that until it can be employed safely in the purchase of retail truck paper it never will be available in sufficient quantities. He held that when selling methods are improved, this condition would be remedied, because the motor truck has a wonderful future as an essential commodity.

More intensive study of potential markets must be made to broaden distribution, and a strong field organization must be built up. Lacking such an organization, he recommended operating through branches.

C. J. Helm of Acme agreed that the quality of truck paper can be improved only by improving the quality of the sale. That can be brought about only by the individual branch or dealer. One means of making such paper more desirable would be to increase the down payment in which the trading allowance usually is included. He said he knew of cases where allowances as high as \$2,000 had been made on used trucks which afterward were sold for \$600.

Mr. Rosson was asked whether it would not be wiser for factories to finance retail sales by borrowing from their banks if they must assume responsibility for them, and replied that it would be if sufficient funds for this purpose were available.

#### Local Selling Effective

Watt L. Moreland of the Moreland company said the loaning operations of his corporation were carried on through a finance company of his own, but he made the somewhat astonishing statement that less than 18 per cent of his trucks are sold on time. He has found it better to rent them to users if they are unable to pay cash.

The business of the Moreland company is limited, however, to a territory in which it can control sales and give factory service. The used truck problem has been solved, he said, by the application of commonsense business principles.

David Ludlum of Autocar asserted that to improve the credit on any commodity it is necessary to improve the credit risks. His company guarantees the paper of its dealers and the finance company simply acts as a banker. Autocar allows a 5 per cent discount on cash sales, and the cash sales of the company increased from 15 to 18 per cent in 1923. He is convinced that it often is possible to induce buyers to go to their banks and borrow money to pay cash in order to save finance company charges. He feels that if factories stood back of their sales it would be possible for finance companies to reduce their charges. A good many trucks have been sold wrong, he said, and that is a subject which must be studied more carefully.

J. H. Collins of the Chilton and Class Journal Companies, in presenting statistics showing the present status of the truck industry, took up the dealer question

from a somewhat different angle. He pointed out that the trend is strongly toward the small truck and that the delivery wagon dominates the field. This may be due, he said, to the fact that trucks are sold on order and are not merchandised as aggressively as they should be. The tendency, as a consequence, is toward the lowest first cost. Truck salesmanship is not on a par with that in other fields, and there has not been enough selling of truck transportation.

In 1919 the average truck selling price was \$1,385 and now it is \$725. This has been due chiefly to the trend toward small capacity vehicles. He estimated the value of new trucks sold last year at \$410,000,000, a decrease of 22.4 per cent as compared with 1919, although the volume of units showed a material increase. More business is being done in terms of sales and less in terms of dollar turnover.

Mr. Collins estimated that 25,998 dealers hold truck franchises, although by no means all of them actually sell trucks. There are only 2414 exclusive commercial car dealers, while 23,584 sell both cars and trucks. Those in the latter category are interested primarily in the sale of cars.

#### Better Dealer Relations Needed

Eight per cent of the business of Ford dealers is in trucks, but with them it is convertible with passenger cars, because they have the same sales and service organization. With other dealers truck business means separate sales, parts and service departments. That is the weakest part of truck merchandising. Most dealers don't think of it as an integral and profitable part of their business.

There is not the proper harmony between manufacturers and dealers, Mr. Collins asserted, and the factories are not close enough to their sales organizations. As a result, dealers have the wrong slant on truck selling and put little real merchandising ability into their efforts. They think only of their own profits and consequently direct practically all their attention to the selling of new cars, leaving the truck end to a salaried employee.

That feeling must be overcome as a prerequisite to intensive selling. The dealer must be convinced that the truck can be sold at a profit and that the possibilities of the field haven't been scratched. There are greater possibilities in that branch of the business than there are in the sale of passenger cars, Mr. Collins declared, because the truck sales curve will continue upward long after that of passenger car sales has begun to flatten out.

#### N. A. C. C. Offers Help

Alfred Reeves, general manager of the N. A. C. C., asked what could be done to clear the atmosphere in the truck business. He pledged the cooperation of the Chamber in any constructive movement and invited the manufacturers to make suggestions. When a dealer goes wrong, he said, the factory usually establishes a branch to take his place, but that's no cure. Factories are too prone to pay \$40,000 a year rent for space in which to house the branch and then place it in charge of a \$3,000 a year manager. He believes branch managers must have the same incentive as dealers if they are to do their best work. It's easy to allow \$100 too much on a used truck when it isn't your money.

"There must be some way out," Mr. Reeves declared, "and the N. A. C. C. will do what you want in a big way to better the situation."

R. J. Corbitt of the Corbitt Co. contended the principal reason truck dealers can't make money is that there are too many factory branches. He charged that branches operated by companies represented at the meeting had

paid as high as \$3,000 for "pieces of junk" not worth \$300 and asked how a dealer could be expected to live under the circumstances. He declared, however, that his company had made money every year with an output of about 300 a year by close personal attention to the business.

Mr. Ludlum said it was about time to get down to brass tacks. He favored paying branch managers better salaries instead of spending money for "junk." He asserted the Autocar proposed to "sell 'em right" in 1924 and expected to have a good year.

Mr. Corbitt proposed that the companies represented at the meeting enter into some kind of an agreement in reference to trading allowances. His proposal was received in silence, however, with here and there a more or less sardonic grin.

Similar suggestions have been heard many times before and they always have received about the same degree of support. There are no present indications that they ever will be received any differently.

Truck company representatives in attendance were:

C. J. Helm (Acme).

D. S. Ludlum, H. M. Coale, Robert F. Wood, W. H. Brearley and R. P. Page, Jr. (Autocar).

H. B. Hall (Bethlehem).

H. Meumier (Bridgeport).

W. H. Brinkerhoff (Commerce).

H. S. Meese (Commercial Truck).  
R. J. Corbitt (Corbitt).  
Sydney A. Cook (Diamond T).  
F. H. Akers (Dodge).  
B. M. Price and O. E. Stoll (Gen. Motors Truck).  
E. W. Kruspe (Graham Brothers).  
H. P. Doolittle and O. H. Browning (International Harvester).  
C. H. Meeker (Lansden).  
R. C. H. Rupp and C. A. Weymouth (Maccar).  
D. C. Fenner and G. H. Scragg (Mack).  
Watt L. Moreland and Mr. Hobgood (Moreland).  
J. G. Myers, Jr. (Pierce-Arrow).  
J. W. Frazer and F. R. Barlett (Pierce-Arrow Finance).  
O. W. Hayes and J. C. Haggart, Jr. (Republic).  
I. L. Stayart (Ruggles).  
K. R. Ackerson (Sanford).  
W. Buner and S. G. Smith (Adolph Saurer).  
A. S. More (Selden).  
Paul Moore (Service).  
F. J. Fisher (Standard).  
Mr. Anderson (Sterling).  
R. J. Laciard (Vreeland).  
William Walter (Walter).  
J. C. Boyers (Ward).  
W. T. White, Frank E. Triebner, F. H. Laning, Zenas Carter and Mr. Stanion (White).

## Sales Plans Should Be Based on Expectation of Stabilization in 1924

**I**N its preparations for 1924 the automotive industry should keep in mind one exceedingly important fact:

The next twelve months promise a greater degree of stabilization for business generally than any year since the pre-war period. Changes, either up or down, will be less sharp than they were in 1923. This condition follows a period of extremes and selling methods must be revamped to meet a new situation.

Three big factors must be considered in selling: (1) The product; (2) its price; (3) its appeal.

Success will be measured largely by the demand manufacturers are able to create for what they have to sell. Competition always is keener in a period of stabilization. If there are any "concealed" values in a product, now is the time to tell the world about them. Now is the time to provide dealers and salesmen with "talking points," to study the wants of potential buyers and either meet them or anticipate them.

Greater consideration must be given the relative prosperity of various sections, such as agricultural and industrial areas.

The manufacturer or dealer who studies these problems most intelligently will reap the biggest crop of profits.

Economists are virtually unanimous about the outlook for 1924. Here is the substance of

what they say about it:

**Annalist**—While no boom impends, normal business prosperity well into 1924 can be expected.

**Hamilton Institute**—Banking conditions should lead to a good average volume of business during the coming year.

**Babson**—Business this year should involve less speculative risk than for a number of years. Business is now in a neutral zone.

**Brookmire**—The fundamental situation is strong and the outlook for the first half of 1924 is for improved business.

**Guaranty Survey**—Prevailing conditions justify a moderately optimistic outlook for domestic business as a whole.

**Harvard**—The first half of 1924 should see a continuance of generally good business and possibly much improvement.

**Moody**—Existing conditions presumably will pave the way for a trade revival, possibly late in the spring.

**Poor**—A vast amount of readjustment is necessary before the foundation for another sustained boom will be sound.

**Standard Daily Trade**—Nothing approaching a real depression is possible now. Business will be better in the second than in the first quarter of 1924.

**United Business Service**—Total 1924 business should be equal to that of 1923, with progressive improvement until midyear at least.



## "Five Per Cent Net Profit" to Be Dealer Slogan in 1924

*Proper handling of used car and service problems will permit retailers to make profit with present discounts, says C. A. Vane. Dealers, with minds of business, throng New York in show week.*

### FIVE PER CENT NET!

This will be the slogan of the automobile dealers of the country in 1924. They have ceased to regard the retailing of motor cars as a "game" and have learned that it is a difficult business to which the most modern methods must be applied if their ledgers are to show black instead of red ink.

The earnest desire of dealers to make themselves better business men became apparent at the New York and Chicago shows last year, and added evidences of this commendable determination were found at the New York show last week. There were probably more dealers in New York for the show than ever before, and they came to work rather than to play.

Factory officials have noted with gratification this change in the attitude of their sales organizations and they are doing everything in their power to foster it. There was a much more businesslike atmosphere about the many dealer luncheons and dinners which were held. For the most part they were sober, serious gatherings at which details of factory plans for the coming year were listened to with close interest as they were presented by presidents and sales managers.

### Dodge Exhibit Popular

Dodge Brothers went farther, perhaps, than any other company in capitalizing the desire of their dealers to learn more about their business. This company leased the roof garden floor of the Pennsylvania Hotel and devoted it to an educational exhibit. This display showed the "why" of various factory operations, from a study of metallurgy to the actual shipment of the products. The heads of all departments, including sales, distribution, shipping, service, engineering and advertising, were constantly on duty to make explanations and answer questions. It was significant that especial interest was shown in the service problem and in the way in which dealer quotas are established. Headquarters were crowded all week with dealers eager to learn.

Less stress was placed by most of the other companies upon the entertainment features of their dealer luncheons and dinners. Factory executives urged their retailers to study more closely such problems as used cars and service, promising all the help they could give in providing solutions. All the addresses made breathed optimism for the coming year and most of the speakers took advantage of the opportunity to ask the cooperation of dealers in stocking cars to meet the spring demand.

Another indication of the eagerness of dealers to obtain assistance from all available sources in their more intensive study of modern business methods was to be found in the fact that attendance at the meeting of the National Automobile Dealers' Association was larger than at any similar gathering ever held at one of the national shows.

The dealers listened with close attention to the account of his stewardship given by C. A. Vane, general manager of the association, and the applause which greeted him indicated that they approved what he is doing. He and the other speakers who addressed them, including G. G. G. Peckham, president, Ohio Buick Company, Cleveland; C. E. Gambill, president, Gambill Motor Company, Hupmobile distributor, Chicago; J. S. Knox, sales consultant, Cleveland; Percy Chamberlain, president, Percy Chamberlain Associates, Inc., Detroit; and F. W. A. Vesper, president, Vesper Buick Auto Company, St. Louis, urged their hearers not to be content with less than a 5 per cent net profit.

### Efficient Selling Advocated

Mr. Vane said the N. A. D. A. had been asked why it had not devoted greater attention to obtaining longer discounts. He replied by asking the dealers why they had not kept the discounts they had received. By the methods they have adopted in handling used cars, he said, they have voluntarily cut their discounts from 25 per cent to 16 per cent.

All the losses are not in used car departments, Mr. Vane added, but are to be found in service, new car sales and in all other departments. He said he would like to know where the idea ever got started that dealers could expect a profit only on the sale of new cars. They seem to think if they break even on other departments they are doing well. He warned, however, that "to break even means to bust." If they stay in business and prosper they must get profits out of all branches of their establishments.

One important fact which cannot be overlooked, Mr. Vane declared, is that retail salesmen don't really understand the business and they must be taught. Many dealers take losses because they lack an adequate accounting system.

### Splendid Year Predicted

The most serious competition comes, Mr. Vane said, from the "curbstoner" and "fly-by-nighter" who keep profits from the real business men. These men know little of the business and most of them are brought into it, he said, by oily tongued factory travelers whose chief job is to get new dealers.

Mr. Vane declared that only ten or fifteen lines are moving in the average community out of which the average dealer can hope to make a profit.

He asserted that all signs point to a splendid year. They are much more favorable than they were last year and production schedules are likely to be kept up. He pointed out, however, that factories must think also of dealer prosperity by helping them increase their net profits.

# Hot Spot Temperature Requirements Determined by Purdue Research

Tests indicate that it is not advisable to use highest rate of evaporation. Better to operate within limits which produce the spheroidal state. Study of exhaust gas temperatures under different running conditions also included in investigations.

**R**ESARCHES to determine the temperatures required to vaporize present-day fuel by means of the so-called hot-spot manifold, and the temperatures available in the exhaust under different running conditions, have been carried out at Purdue University by C. S. Kegerreis, research associate of the Engineering Experiment Station, and O. C. Berry, chief engineer of the Wheeler-Schebler Carburetor Co., and the results obtained will be published in a bulletin soon to be issued by the Experiment Station.

In the first place, experiments were made with hot plates to determine the rate of vaporization per unit area with different fuels at different temperatures, as well as the temperatures giving the all-round best results and those at which solid matter begins to deposit. An iron plate 4 by 8 in. in area and  $\frac{5}{8}$  in. thick was placed over an electric heating element and packed in a box filled with asbestos. Centrally at the top there was a well 1.015 in. in diameter and 0.128 in. deep. Two thermometer wells were drilled in the plate from each side, one of each pair being as close to the vaporizing well as possible and the other about half way out to the edge,

where there was little or no flow of heat toward the vaporizing fuel.

The vaporized fuel was carried away by a hood on the plate. Gasoline was weighed on a chemist's balance, the fuel being siphoned from a beaker on the scale through a small copper tube to a point  $\frac{1}{2}$  in. above the top of the well, the flow being regulated by means of a needle valve placed in the line just outside the hood. It was found that a portion of the fuel was thrown out over the edge of the shallow well, and to obviate this, in the later tests the vaporizing well was made deeper, by welding metal around the top of the well, the depth being increased 0.610 in. Various considerations led to the conclusion that the results from the shallow well tended to be too high and those from the deep well too low, so the average between the two was used.

Three gasolines and one kerosene were tested, the distillation data of the four being as given in the following table:

## DISTILLATION OF HYDROCARBON FUELS

Gravity of Fuel—Baumé Scale

Per Cent Distilled	70	64.2	56.5	41.5
Initial Boiling Point	97° F.	120° F.	96° F.	346° F.
10.....	127	155	162	386
20.....	143	169	210	400
30.....	155	179	247	408
40.....	165	187	272	413
50.....	176	196	295	424
60.....	187	205	313	432
70.....	193	215	335	440
80.....	206	227	356	452
90.....	225	245	381	476
Maximum .....	300	312	425	524

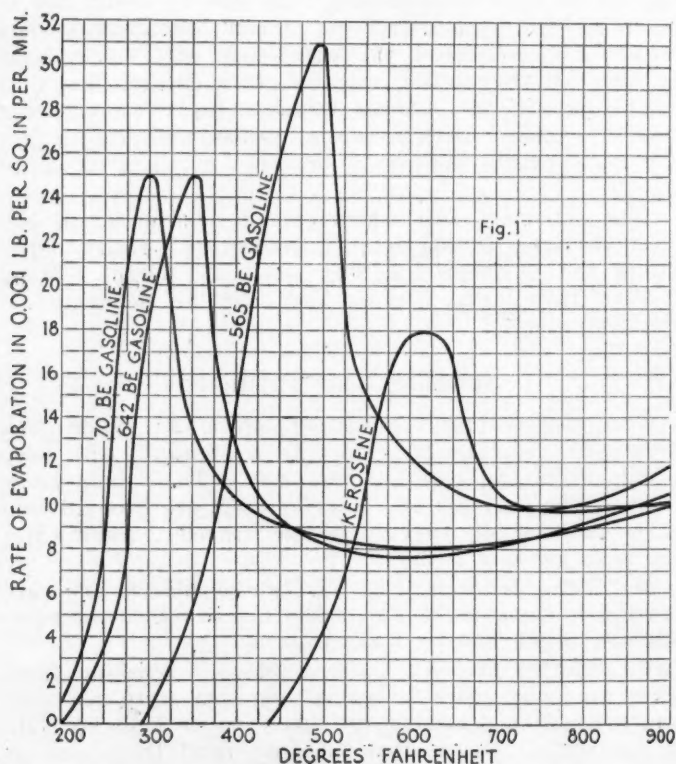


Fig. 1—Rates of evaporation of different fuels at different temperatures

In conducting a test on the hot plate the current was switched on the heating coil and the plate heated gradually to the point of vaporization of the fuel in the well. This point varies with different fuels. In the meantime, the depth of fuel in the well was adjusted so that when the correct temperature was attained the rate of heat conduction was steady and the temperature constant.

## Test Methods Outlined

When the temperature and wetted area in the well were properly adjusted, the beaker on the scale pan was filled, the weights made ready and the beam let down on the knife edges. When the beam came to a balance, the stop watch was started. Weights equal to the weight of fuel to be used during the tests were then removed from the pan and attention centered on the control of the liquid level in the well and the recording of the temperature of both the plate and the scale box. As the beam again balanced, the watch was stopped, thus completing the test.

Berry and Kegerreis plot the time required to evap-



orate 0.01 lb. of fuel per square inch of surface against the temperature, and give graphs of this nature for each fuel. It seemed to the reviewer that the results would stand out better if the rate of evaporation in pound per square inch per minute were calculated and this plotted against the temperature. This calculation has been made from the authors' results and the results for all four fuels are given in Fig. 1. The curves are similar in their general characteristics, the difference being that

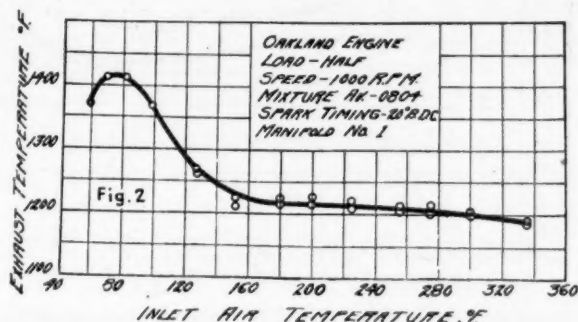


Fig. 2—Relation between inlet air and exhaust temperatures

increasingly high temperatures are necessary to vaporize the less volatile fuels.

While the fuels were boiling briskly, solid matter was deposited on the edges of the well. That from the two lighter gasolines resembled paraffin, while that from the heavier gasoline and the kerosene resembled asphalt. When the spheroidal state was reached the deposition of solid matter ceased entirely. It was found that deposition takes place only through a narrow temperature range, which is entirely below the temperature that will throw the fuel into the spheroidal state. The high temperatures do not cause clogging of the manifold.

The inflections in the curves marking the maximum rates of evaporation are due to the fuel entering the spheroidal state. The temperatures at which this change of state takes place is in each case well above the end point of the fuel, the end points and the corresponding temperatures marking the beginning of the spheroidal state being as follows: 300 (350) deg.; 312 (390) deg.; 425 (520) deg.; 524 (620) deg. Fahr. When the liquid was boiling from a wetted surface the vapor was quite wet and condensed easily. In the spheroidal state the vapor was dry and almost invisible.

The conclusion is drawn from the results that it is not advisable to use the highest rate of evaporation, because the temperature range corresponding to this high rate is too narrow and because it is within this temperature range that solid matter is deposited. It is better to operate within the temperature range producing the spheroidal state, and it will be seen from the curves that after this state is once reached, any further increase in temperature does not change the rate of evaporation materially. In a few tests the hot plates attained a cherry red, but in no case were the vapors ignited at less than 1460 deg. Fahr. It is thus practical to use a very wide range of temperature in the hot spot.

### Exhaust Gas Temperatures

The temperature of the exhaust is influenced by the following factors, and tests were made to determine the influence of each one of them:

- Temperature of cooling water.
- Temperature of inlet air.
- Timing of ignition.
- Richness of fuel mixture.
- Speed of engine.
- Load carried by engine.

The tests were made with an Oakland six-cylinder

2 13/16 by 4 3/4-in. engine. Two manifolds were used. No. 1 had the early conventional type of hot spot, in which a small portion of the exhaust is passed around the three headers of the inlet manifold, while No. 2 had the intake cast on top of the exhaust, with enough contact between the two headers to allow of a large flow of heat.

Exhaust gas temperatures were measured by means of iron-constantan thermo-couples. These couples do not have a straight line calibration relation, and it was necessary to check the calibration with a platinum-rhodium couple. To insure accuracy, the calibration was checked at intervals with the standard couple in an electric furnace. The bare tips of the couples were placed at the exhaust ports where possible, and in the center of the manifold section in other cases. In some of the tests with manifold No. 1 one couple registered the temperature of the gases from cylinders Nos. 1 to 5, while the other couple indicated the temperature of the exhaust from cylinder No. 6.

In investigating the effects of changes in temperature of the cooling water and of the inlet air, of the ignition timing and the richness of the fuel mixture, all tests were run at half load at 1000 r.p.m. All of the running conditions were held constant except the one under examination.

### Unexpected Results

Contrary to what might be expected, the tests showed the cooling water temperature to have little influence on the exhaust gas temperature. Increasing the cooling water temperature from 70 to 212 deg. Fahr. decreased the exhaust temperature less than 50 deg. It is concluded that the best cooling water temperature depends more upon lubrication than carburetion requirements.

Inlet air temperatures were varied between 59 deg. Fahr. and 336 deg. Fahr., and the effect on the exhaust temperature is shown in Fig. 2. The following comment on this curve is offered by the authors: With the air at 59 deg., probably not all of the fuel burned before the beginning of the exhaust. As the temperature increased to 80 deg. combustion became complete, but since it was slow, the drop in temperature due to radiation and useful work was at a minimum. At temperatures between 80 and 160 deg. vaporization of the fuel

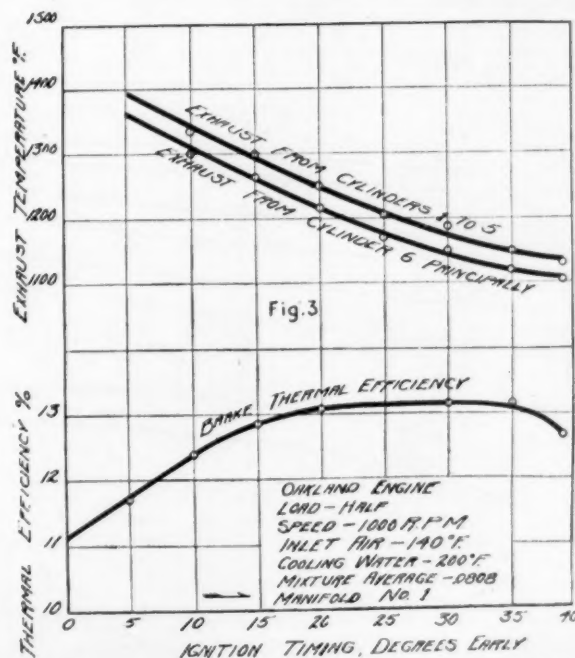


Fig. 3—Effect of ignition timing on exhaust temperature at half load

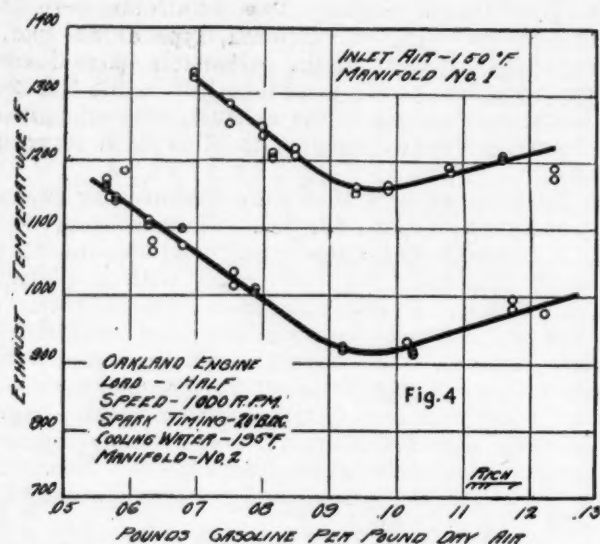


Fig. 4—Effect of mixture ratio on exhaust temperature with two different manifolds

improved very rapidly, the rate of combustion increased, the drop in temperature due to radiation and useful work increased and the exhaust temperature decreased correspondingly. Beyond 160 deg. the exhaust temperature continued to decrease with increasing inlet air temperature, but only at a slow rate.

The effect of a change in ignition timing was studied with the engine idling at low speed, running under half load at 1000 r.p.m. and under full load at 2000 r.p.m. It was shown that in all cases an advance of the ignition reduced the exhaust temperature. While developing 0.24 hp. at 275 r.p.m. the exhaust temperature decreased from 390 deg. at 5 deg. lag to 300 deg. at 33 deg. advance, the inlet temperature being 150 deg. and the average mixture ratio 8.5 to 1. Two series of tests were run at half load, with slightly different mixture ratios. As would be expected, the exhaust temperatures were highest with the richer mixture. Roughly, the temperature decreased from 1475 deg. for a 5 deg. advance to 1120 for a 33 deg. advance, with a 12.4:1 mixture, and from 1450 deg. for a 6 deg. advance to 1090 deg. for a 39 deg. advance with a 10.7:1 mixture.

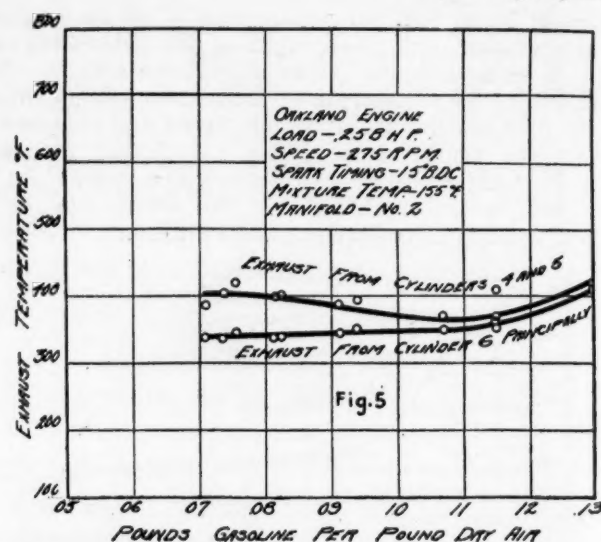


Fig. 5—Effect of mixture ratio on exhaust temperature while idling

Under full load at 2000 r.p.m. the exhaust temperature decreased from about 1450 deg. for a 5 deg. advance to 1325 deg. for a 45 deg. advance.

The effect of the mixture ratio on the exhaust temperature was determined by three test series, two at half load and 1000 r.p.m. and one at small load and low speed. In these tests the power was kept constant and the mixture ratio varied to determine the effect on the exhaust temperature. When using manifold No. 1 the intake air was preheated for good performance, while in the case of manifold No. 2 the mixture was heated. Both series show the same results, except that the exhaust temperature for any mixture ratio is 200 deg. lower with manifold No. 2. This is due partly to the use of less heat on the hot spot than where the air was preheated and partly because the radiation from the exhaust manifold was higher. While idling with manifold No. 2, the temperature of the exhaust from cylinder 6 was up to about 60 deg. lower than that of the exhaust from cylinders 4 and 5, which points to poor distribution, and the idling with this manifold was not very good, especially with the leaner mixtures. In practice the mixture ratio must be

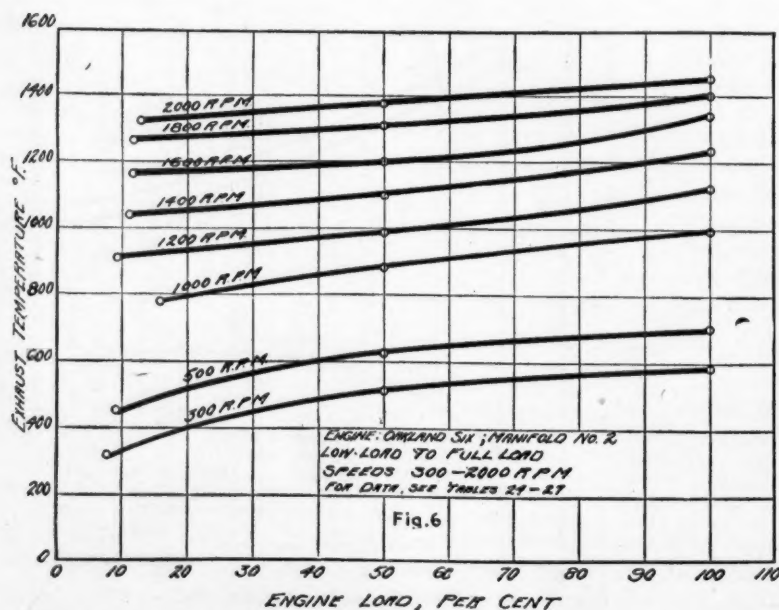


Fig. 6—Effect of speed and load on exhaust temperature

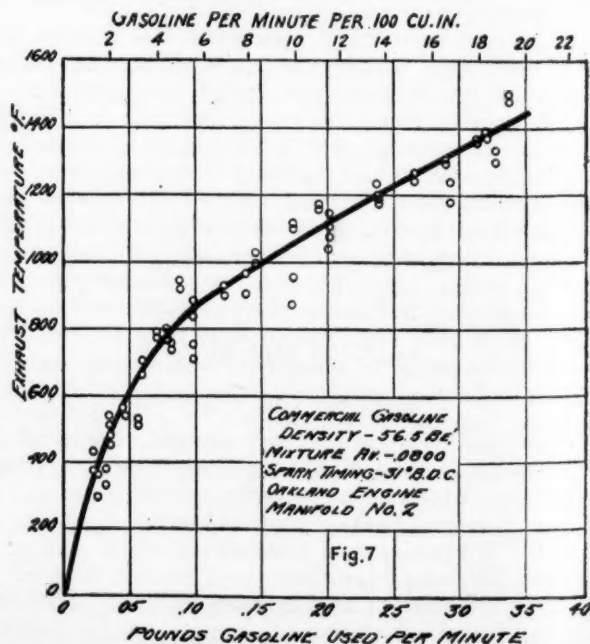


Fig. 7—Relation between rate of fuel flow and exhaust temperature



adjusted for high power and high efficiency, and under these conditions the exhaust temperature will be nearly a maximum.

Increases in speed while the load is held constant produce a proportional increase in exhaust temperature. Thus with manifold No. 2 with the engine under small load, the exhaust temperature increased from 400 deg. at 400 r.p.m. to 1340 deg. at 2000 r.p.m. At half load with the spark advanced 31 deg. and with an average mixture ratio of 12.9:1 the exhaust temperature increased from 500 deg. at 300 r.p.m. to 1375 deg. at 2000 r.p.m. Under full load the exhaust temperature increased from about 600 deg. at 300 r.p.m. to about 1450 deg. at 2000 r.p.m.

### Range of Exhaust Temperature

It will be seen that the exhaust temperature varies from a minimum of about 300 deg. to a maximum of nearly 1500 deg. Under normal operating conditions with a well designed manifold the temperatures are usually high enough to deal with a fuel somewhat less volatile than our present gasoline, whereas at low idling speeds the temperatures are hardly adequate for our present fuel, but as a result of the reserve heat in the manifold an engine can idle for about 15 min. before the temperature reaches a minimum. When using particularly heavy fuels the idling speed can be raised

somewhat, if necessary, to obviate trouble from poor vaporization.

In practical operation the condition most difficult to meet is the sudden opening of the throttle after a long period of low speed idling. While idling, the pressure in the inlet manifolds is very low, under which condition the fuel vaporizes at lower temperatures than at atmospheric pressure. In addition, during periods of idling the temperature of the metal of the spot drops to a minimum. Sudden opening of the throttle draws a large amount of fuel into the manifold at nearly atmospheric pressure, and these two conditions both demand additional heat and constitute the most severe conditions to which the manifold can be put.

For any engine there is a definite relation between exhaust gas temperature and rate of fuel flow. This relation for the engine used in these tests is represented in Fig. 7. No matter what the load and speed that produce this rate of fuel flow, the relation is a definite one so long as the spark timing and the mixture ratio remain constant. This same curve can be applied to other engines if the relation between flow rate and piston displacement is the same, and to facilitate this application there has been added a second scale to the horizontal axis, showing the rate of fuel flow per 100 cu. in. piston displacement.

## Benzol Produced from Acetylene

**B**ENZOL can be produced from acetylene by polymerization; that is, three molecules of acetylene ( $C_2H_2$ ) can be combined into one molecule of benzene ( $C_6H_6$ ), which latter is the chief constituent of commercial benzol. Some experiments along this line are described in a recent note by N. D. Zelinsky presented to the French Academy of Sciences by A. Haller.

Mr. Zelinsky filled a tube of Jena glass or porcelain 9/16 in. in diameter by 27.5 in. long with powdered charcoal. After having driven the air from the tube by means of a current of pure acetylene gas, he raised it to a temperature of between 1180 and 1200 deg. Fahr. in an atmosphere of acetylene. The speed of penetration of the acetylene into the tube was such that it still was possible to count the gas bubbles which traversed the washer. At this speed it was possible to obtain, during a period of 20 hours, 0.254 lb. of acetylene condensate, recovered in a refrigerating machine. This condensate had the color of tea of average strength and a specific gravity of 0.9234 at 63 deg. Fahr.

When the velocity of the acetylene current was increased, a greater quantity of condensate was obtained, in one instance 0.242 lb. of a specific gravity of 0.951 in seven hours. In another case, where a tube of smaller bore was used, there was recovered in eleven hours 0.4 lb. of condensate.

When operating under the conditions indicated no explosion of acetylene occurs. The main mass of the latter, after contact with the charcoal, undergoes almost complete polymerization; a part passes through the tube without being modified and a small proportion is decomposed. The favorable effect of the charcoal on the condensation of the acetylene is thus beyond doubt.

These preliminary experiments were followed by others on a larger scale. After the first passage of the acetylene the yield in condensate was from 70 to 74 per cent of the gas admitted to the tube. The part of the charcoal as a catalyser in the condensation of acetylene is thus obvious. The acetylene molecules retain their identity, in spite of

the great pressure and the high temperature within the porous mass of the charcoal. The reaction of condensation takes place normally without explosion and without appreciable decomposition. The specific gravity of the condensate varies from 0.911 to 0.995 for temperatures varying from 1110 to 1220 deg. Fahr. A quantity of 2 lb. of this product had the following distillation characteristics:

68-300 deg. Fahr.	45 per cent
300-480 deg.	13.9 per cent
480-750 deg.	29.0 per cent
Residue	12 per cent

Certain products of condensation gave 50 per cent of crude benzol having boiling points up to 300 deg. Fahr. Fractionation of this benzol showed that 40 per cent distilled between 174 and 240 deg., the greater part of this fraction being composed of benzene, while toluene and xylene are present in small quantities.

As this fraction was not entirely neutral with respect to potassium permanganate, it was treated with concentrated sulphuric acid, which purifying process yielded absolutely pure synthetic benzene which distilled over completely up to 175 deg. Fahr. The 2 lb. of tar gave 0.67 lb. of benzene (35 per cent). Other products obtained in the pure state were 4 per cent of toluene, 0.4 per cent of paraxylene, styrol, indene, and, after repeated crystallization, 6.7 per cent of naphthalene, 1 per cent of fluorene and a good deal of anthracene.

Thus it will be seen that by the polymerization of acetylene in contact with powdered charcoal it is possible to obtain all of the principal aromatic hydrocarbons.

The Miniature Incandescent Lamp Corp. of Newark, N. J., manufacturers of Tung-Sol bulbs for automobile lamps, have placed on the market a new type of bulb called the Tung-Sol Fixed Focus, in which the distance from the center of the filament to the base is held within such close limits that it is not necessary to refocus a lamp when a new bulb is inserted.

# Just Among Ourselves

## Ludlum Hires Lawyer for Whole Autocar Family

**D**AVE LUDLUM, president of the Autocar Co., is keenly interested in the welfare of the men in his employ. He doesn't believe, however, that they like to be coddled. His views on this subject are similar to those of many other executives. There are ways of helping industrial employees without attaching the "welfare" label, and Mr. Ludlum has found a novel one. In his rounds of the shops he discovered there were many workers who had been gouged by loan sharks, crooked lawyers, quack doctors, book agents and sellers of worthless stocks. He felt that these men needed an honest lawyer to advise them and he had the company's counsel assign W. H. Brearley to serve as personal attorney for all employees of the Autocar Co., no matter what form of legal assistance they may need, from the drawing up of a deed to fighting the machinations of a loan shark. The experiment has done more than a little to promote the happiness of the Autocar family.

## Durant Buys Big Block of Safety Razor Stock

**D**URANT MOTORS, INC., has grown so rapidly in the last two years that it has been difficult for anyone not directly connected with it to follow all its ramifications. Most people know that it includes, in addition to sundry passenger car plants, truck, parts, glass and body factories, to say nothing of a bank and a corporation which sells securities. It is not generally known, however, that Mr. Durant has acquired a substantial interest in the American Safety Razor Co. C. F. Daly, a director of Durant Motors and one of "the chief's"

principal aides, has been elected a director of the razor corporation. It is assumed the stock will be sold to the Durant "partners" through the Durant Corp. and that there is no particular significance in the commodity for which it stands.

## "Automobile Millionaires" Hold Reunions at Dinner

**W**. C. DURANT and John N. Willys greeted each other affectionately at the N. A. C. C. dinner. They long have been friends and admirers but they have had little chance for visiting in the past two years. Each has been exceedingly busy with his own affairs and they could probably exchange some interesting reminiscences on the general subject of bankers. The N. A. C. C. dinner affords an annual opportunity for such reunions. The ante-room off the grand ballroom of the Commodore, where Charles M. Schwab, the guest of honor, was parked preceding the dinner, contained a dozen or more of the "automobile millionaires." There was no attempt, however, to separate the sheep from the goats, and a good many of those gathered around would not need seven figures to estimate their fortunes.

## Why Reeves Never Eats at His Own N. A. C. C. Feasts

**A**LFRED REEVES, general manager of the N. A. C. C., probably has survived as many banquets as any man in the industry. He knows banquets backwards and forwards from soup to nuts and from nuts to soup. A few minutes before the hour set for that of his own organization's dinner last week he was seen darting into the lunch room of the Commodore. He climbed upon a stool and frantically summoned a garcon.

"Bring me a hot roast beef sandwich and a piece of pie in a hurry!" he commanded. "I'm due at a banquet in six minutes." Mr. Reeves never eats at his own dinners. He's too busy seeing that the other people are being well served and that the officers of the N. A. C. C. are carrying out properly the instructions he has given them in advance.

## Meixell Annoyed by Wig as He Reads "Citations"

**H**ARRY MEIXELL, secretary of the legislative committee of the N. A. C. C., has conferred the "decorations" on distinguished representatives of the industry at the last two annual dinners. In preparation for this function he dons a gown and wig. At the dinner last week some kindly intentioned diner informed Mr. Meixell that his wig was on crooked. That was the reason why Meixell was pawing surreptitiously at his wig while reading the citations in a sonorous voice. It was contended afterward, however, that Roy D. Chapin and Walter P. Chrysler, who were decorated along with Capt. Eddie Rickenbacker and F. J. Haynes, were just as nervous as he was.

## Salesmen Complain of Time "Wasted" Talking to Dealers

**N**OT quite so many cars were actually sold at the New York show this year as on some occasions in the past, but generally speaking local distributors were pretty well satisfied. One reason advanced was that a large proportion of the visitors came from other places and when they give their orders they will go to their home town dealers. From a factory point of view it makes little difference where their products go. One complaint made by the salesmen at



## More or Less Pertinent Comment on Topics of Current Interest to Men in the Industry

the show as representatives of New York distributors was that they were called upon to "waste" so much of their time describing the new lines for the benefit of dealers from other places. It was true that dealers from all over the East went to the show in large numbers seeking information, but that is one of the purposes of the New York and Chicago expositions. If salesmen working on a commission basis find it a "waste" of time to talk to dealers, therefore, there should be factory representatives at every display to give them the information they want.

### Motor Car Sales Are Not Limited to Income Tax Payers

AN investigation made by the *National Retail Clothier*, official organ of the National Association of Retail Clothiers, has disclosed that the country is going to the dogs because wage earners have developed a positive mania for buying all kinds of merchandise on time. Automobile buying causes the clothing dealers the greatest anguish, however. It is estimated by the paper that there are a little more than 10,000,000 passenger cars operated while there are only 4,000,000 persons who file tax returns on incomes in excess of \$2,000. From this it is deduced that more than 6,000,000 persons earning less than \$40 a week are motorists. We supposed everyone had outgrown the income tax myth as it relates to automobiles. Even a cursory examination discloses that motor car registrations in exclusively agricultural districts exceed by three to one the number of income tax returns. As a matter of fact, there are less than 750,000 persons in the country who report incomes of \$5,000 or more. It is possible to deduce almost anything from

income tax returns, but the deductions are as leaky as a sieve.

### Trying to Get Newspapers to Tell Accident Causes

AN attempt to get the newspapers of the country thinking along more constructive lines as regards automobile accidents was one of the first steps taken by the recently organized Traffic Planning and Safety Committee of the N. A. C. C. Two blanks, designed to aid in reporting accidents, have been sent to the newspapers of the country in towns of more than 25,000 inhabitants. One is for the reporter and one for the city editor and on them is provided space for listing the cause, as well as the nature, of the accident. It is hoped that the newspapers will be influenced thereby to give greater publicity to the real causes of traffic accidents in their weekly summaries. The editors are being asked to return the reports to the N. A. C. C. for the purpose of building up further detailed information about accident causes, but the real purpose of the blank idea, for which George M. Graham is responsible, is to get the press to treat automobile accidents more fairly than in the past.

### Will Travelers in Future Be Distribution Employees?

THE trend away from further whittling down of dealer territories is becoming more marked. A good many factories have decided that they went too far in that direction. Just as an example, Durant Motors recently has very greatly enlarged the territories of some of its distributors and in several cities men who were receiving distributor discounts and doing an almost

exclusively retail business, have accepted dealer franchises. The distributors in these cases are amply financed and will be held to strict accountability for dealer relations. They will be expected to cover their territories with travelers who will perform the same functions that factory travelers do now, except that they will be in closer and more intimate touch with dealers, and therefore in better position to help them solve their problems.

### Minnesota Snow Fails to Stop Low-Hung Coaches

WE noted in these columns quite a time ago that operators of traction companies in the Eastern territory were skeptical about the ability of low-hung coaches of the type so widely used on the Pacific coast to operate through snow drifts in the winter months. This contention brought a prompt protest from the Ohio Fageol Motors Co., which offered to produce evidence which would prove that its coaches never lost a trip because of snow in a country where the drifts are deeper than in the East. Now it has come through with a statement from the Range Rapid Transit Co., Eveleth, Minn., that two of its Fageol coaches, operating between Duluth and Virginia, a distance of 68 miles, made two round trips daily all through last winter. "We had all kinds of snow," the company says, "and the two Fageols went through places that all other buses on the run couldn't go through." One of the coaches, bought in October 1922, has been driven 150,000 miles and the other, delivered Dec. 6, 1922, has gone 130,000 miles. This seems to be a pretty good record for a low-hung type of bus in a country where the winters are admittedly "right smart." J. D.

# Why Not Build All-Purpose Bodies with Rear Doors?

This construction has advantage of easy loading of freight without marring paint or trimmings and need not be unsightly. Side entrance for passengers would be retained and back seat cushions arranged to be folded quickly against rear of front seat.

By Harry Wilkin Perry

**T**HERE is a big potential market for a new all-purpose type of passenger car body. Automobiles today are used at times for carrying a wide variety of goods, especially when owned by farmers and residents of small towns and villages. Even the city car owner sometimes uses his passenger car in a service for which it was not intended and is not suited.

Practically every farmer needs a semi-commercial car—something to take the place of the old-time democrat wagon—which can be used equally well as a passenger vehicle and a light wagon; and there are more than 6,000,000 farms in the country. Many others would welcome a car which can be used for carrying small loads in the rear instead of passengers, a body especially designed for convenient loading and unloading of heavy, bulky or awkward articles and which would not be marred thereby.

The need for such a body is evidenced by the popularity of the station wagon body, now extensively used in suburban communities, as well as in small towns and the rural districts. The station wagon is, however, primarily a wagon. It is frankly a commercial car—used occasionally for passengers. Its utility is unquestioned, but it is not the type of body chosen for comfortable riding.

## Demand for Combination Body

What is wanted, although the want may not yet have found voice, is a style of body that is just the reverse of the station wagon; one that is obviously first a private passenger car body, but that is adapted for the secondary purpose of carrying light loads of miscellaneous articles.

Attempts to meet this need are seen in the Dodge Bros. pressed steel sedan with removable rear seat, and the Overland Champion body. Both show a recognition by big producers of the large potential market for the type of body under consideration.

The Champion body is a comprehensive attempt to create an all-purpose vehicle. It is a straight-line sedan with a wide rear side door, removable rear seat and a considerable load space back of the front seat. Both seat backs are hinged, so that when lowered to a level with the seats proper they form a bed suitable for campers' use.

In the writer's view the all-purpose body should be a passenger car type. The sedan lends itself excellently to the purpose, but the coupé has too small an interior. The phaeton, or touring car body, is inappropriate for the particular construction in mind.

Probably the type that will best serve all purposes, summer and winter, will have a permanent top, built integral with the body, be as open as a phaeton, but have

plate glass windows that can be lowered and raised easily and quickly. The California top style seems to offer the best solution.

In a passenger vehicle a side door is necessary for the persons who use the rear seat, but a side door has distinct disadvantages when it comes to loading and unloading trunks, barrels, pieces of furniture, etc. A side rear door can seldom be made wider than 23 in. in a small or medium-sized car because of interference with rear fenders, and, unless the front seat can be moved or tilted forward, it further restricts the loading width and will certainly be in the way.

## Rear Door Suggested

A side door and the back of the front seat are sure to become scratched by the passing in and out of rough boxes and other freight. The rear fender is also liable to scratching and denting, while the finish of the apron between run board and frame is more than likely to be marred.

A suggestion that the all-purpose car should have a door at the rear for merchandise, as well as side doors for passengers, will be received with adverse first thoughts. But it is worth defending because it is so clearly best for the purpose, as all delivery wagon practice testifies. The main objection to a rear door is that it is out of place on a passenger vehicle. Granting this, is it incongruous on an all-purpose car?

If so many people are willing to ride in a station wagon, which is so obviously a business vehicle, few will object to a rear door in a car designed primarily for passenger use but frankly intended for occasional transportation of goods. It is largely a matter of design. Anything is congruous that best serves the purposes for which it is intended, provided it is well and harmoniously proportioned and suitably finished and that it does not make ill-concealed false pretenses to be something that it is not.

## Freak Construction Unnecessary

Although a passenger car having a rear door might be recognized for what it is, it would not need to be freakish, and there are plenty of commonsense Americans to constitute a very large prospect list for just such a highly useful vehicle.

A rear door need not be conspicuous. Suitable molding around the edges could conceal the break in the paneling of the back, and if a visible handle is objectionable, no doubt a device for operating the latch could be located beneath the lower edge of the door, where it would be unobtrusive or could be wholly concealed.



Such a door preferably would be 28 or 30 in. wide and have a large light of plate glass in the upper half to give the driver good vision to the rear, as in any closed car. It should be hinged on the left side, so that it would not be in the way when loading and unloading at the curb on the right side. Twin doors, opening right and left, would be unsuitable because they would require two windows instead of one large one and would be more conspicuous than a single large door.

So large an opening in the back of the body would make it necessary that the upper part of the body frame be especially well braced against sidesway, and the door would need to fit snugly so that there would be no relative movement between the door and the rest of the back.

### Design Difficulties Can Be Surmounted

If, despite the advocacy of a rear door, there is unalterable opposition to it, there are other solutions whereby easy side loading is attainable. These, however, involve a movable or removable front seat and the use of a removable pillar between the front and rear side doors, or the total absence of such a post, so as to give a wide, unobstructed opening for loading. Such a construction presents some designing difficulties but is not impossible.

Elimination of the pillar would deprive the top of some support, and there would be no solid frame for the edges of the doors to close against. The side of the front seat could be made to serve as a solid stop for the doors, however, and the meeting edges of the two doors could be flanged so that the offset part of the front door would seat in the recessed part of the rear door, making a practically rain-tight and wind-tight joint.

A device for locking and releasing both doors simultaneously with single handle operating vertical rods connected with latches engaging the floor and the top would permit both doors to be opened instantly in case of an emergency. And since the front door is used most frequently and, as a rule, is closed after the rear door, there would be no serious objection to having it close upon the rear door.

What to do with the rear seat of the all-purpose body when the rear compartment is used for carrying goods is something of a question. It is undesirable to have to remove it altogether, as there would be many times when the seat would be needed for passengers going in one direction and a large load area would be required on the return trip. For this and other reasons it is preferable to provide a seat that can be moved to a position where it will be out of the way and take up the least possible floor space.

### Seat Back May Be Hinged

Clearly, this position is immediately behind the front seat, and the least floor space will be occupied if the back of the rear seat is hinged so that the seat can be opened out flat and then stood on edge. Thus it will take only 6 or 8 in. from the length of the load floor. Some means of securing the seat and its back in this position, such as suitable hooks or latches on the front seat, will be required. In this position, the upholstered side of the rear seat would be against the back of the front seat and it could be damaged easily.

There need be no upholstery on the body sides to be torn or soiled. There is a strong tendency now toward simplicity and plainness in closed bodies and it is believed that buyers of the lower-priced cars would make no objection to the absence of upholstery. A body without upholstery of any sort would be cooler and cleaner than

one upholstered in either cloth or leather and a considerable saving in expense would be effected.

A body of the type described could be used conveniently for sleeping on a camping trip. The rear seat could be moved forward and a large quantity of camping duffle carried in the rear, loaded and unloaded through the rear door. It would be a simple matter to arrange for the attachment of a small, light lean-to tent at the back of the car to provide a dressing room in which the campers could stand upright and in which children or additional members of a party of more than two could sleep.

Details of design that have been mentioned are merely by way of suggestion. The main objects sought will have been accomplished if manufacturers and designers are set to thinking of the possibilities of the all-purpose body as a sales proposition and as a design problem. After giving much thought to the subject the writer is convinced that there is a good market waiting for a passenger car that is instantly convertible into a convenient light commercial car and for a body with a permanent top having all the airiness of the open car yet convertible in a minute or two into a snug closed body.

## American Tractors in French Trials

ALTOGETHER, twenty-nine makes of tractors were exhibited at the autumn tractor trial at Essonne-Corbeil, France. Of this number, eleven were American and the rest French, with the exception of the Austin, an English tractor actually, however, manufactured in France; the Excelsior and Praga, Czechoslovakian, and the Fiat, Italian.

The relative amount of interest displayed in the French and American makes indicated quite clearly that the French public are more than partial to the latter, says Assistant Trade Commissioner David S. Green in a report to the Commerce Department. With the exception of the new Citroen caterpillar tractor performances of the French models did not arouse much enthusiasm among the onlookers.

### New Caterpillar Type Exhibited

Much is expected from the Citroen firm from the new caterpillar tractor which it displayed on this occasion for the first time. It contains the regular Citroen 10-hp. motor, in a very stubby body equipped with a caterpillar tread with a traction surface of 1.50 by 0.40 meters. The carburetor is equipped with a safety attachment which makes it impossible for the driver to force the motor beyond its endurance.

This model is equipped with pneumatic front tires for use everywhere but on fields. They can be quickly removed and replaced by all-steel wheels 4 in. wide and with an inner projection similar to those on railroad car wheels. Hardly a foot separates these front tires from the caterpillar tread. It is claimed that the tractor can turn in an unusually small space.

While the regular quotation for this model is 22,000 francs, considerably higher than the prices on the most popular American tractors, the manager of the exhibit intimated that it will be sold to French farmers at a special rate of 17,500 francs under an arrangement with the Government by which the latter can commandeer the tractor on the declaration of war. At a price of 17,500 francs this tractor should sell very well, for the popularity of the Citroen motor is well established throughout France.

The trials demonstrated clearly the supremacy of the American makes of tractor, Mr. Green reports.

# Combines, Schwab Advises, Would Not Mean Ruin for Small Makers

Asserts there always will be room in industry for producers of specialized lines. Consolidations mean lower marketing costs. Sees parallel with steel.

**C**HARLES M. SCHWAB is a real captain general of industry. He has been all through the mill, literally as well as figuratively. He has watched the wheels go round so long he knows exactly what is likely to happen under any given set of conditions. He's a steel man primarily but he's intimately familiar with all industry.

These are some of the reasons why members of the National Automobile Chamber of Commerce were startled when he declared in an address at the annual dinner of that organization last week that the time was not far distant when there would be only ten or fifteen companies in the passenger car field instead of sixty or seventy as at present.

His prediction would have been important had it been made only as the head of the second largest combination of steel companies in the world, but it assumed added significance because of his financial control of the Stutz Motor Car Company of America and the American Body Corporation. He now has a direct stake in the automotive industry, although for a capitalist of his calibre it is a small one, and he obviously has studied its future with considerable care.

## Sales Costs Should Be Cut

The importance attached to Mr. Schwab's forecast is a tribute rather to the man than to any especially new idea. The assertion has been made frequently in the past two years that the "survival of the fittest" period has arrived in the automotive field. There are many men besides Mr. Schwab who are convinced that an era of combinations and consolidations is at hand. This contention has been based largely upon the history of steel and other industries which found, when competition became exceedingly keen, that it was advisable to devise some means to lower overhead and marketing costs.

No subject can be of greater interest to manufacturers at a time when general business has become more or less stabilized and the battle for sales has become increasingly keen than methods which can be employed to reduce selling expense. For that reason we asked Mr. Schwab to amplify his statement at the N. A. C. C. dinner.

"Up to this time attention of the automotive industry has been directed to shop costs almost exclusively," he said. "The time has come to get after administration and overhead. It is the only industry which must add 50 per cent to its manufacturing costs to get its products into the hands of buyers."

That's all there is to it in his opinion. It's a simple, commonsense proposition. He believes that the automotive industry has gone about as far as it can in effecting manufacturing economies just as the steel industry had in 1900 and that, if the cost to the ultimate consumer is

to be lowered materially so that the potential market can be broadened, the only way to do it is to cut administration and selling costs.

Some progress in this direction may be made by individual concerns, but the only way in which sharp savings can be effected is by combinations which will permit the operation of several plants by a single executive staff and the distribution of their products through a compactly welded sales organization. In most organizations, he said, there are too many high salaried officials and they frequently stand in the way of the consolidations dictated by economic horse sense, but it usually will be found that these men can be taken care of in a combination just as they were in the steel industry.

## Consolidations Inevitable

"Consolidations are perfectly logical and inevitable," Mr. Schwab continued. "There are people in the industry who have no business in it and more are coming in all the time. Others with good products, well engineered, are coming in on too small a scale. The General Motors Corp. is my ideal of what can be accomplished by consolidation in the automotive industry. This business is now facing exactly the same problems which confronted the steel industry in 1900.

"In an industry like that of automobile production, with such a great variety of products, and with none of them of a staple variety, there must and always will be a large amount of competition. But there is one kind of competition which works for efficiency and lowered costs to the consumer; there is another kind of competition which does nothing but promote extravagance and add to the price which the consumer must pay. It is this latter kind of competition which today burdens the automobile industry and is an unnecessary burden upon the public which buys motor cars.

"But," he added significantly, "consolidation, which is a better word than combination, doesn't mean the elimination of small concerns making specialized products any more than it has in the steel industry."

## Place for Small Makers

So far as Mr. Schwab's interlocutor was concerned this was the crux of the whole situation.

The major part of the passenger car production of the country already is concentrated in the hands of a comparatively few companies. Ford alone has approximately 50 per cent and General Motors alone close to 20 per cent. Adding to this the output of the eight other leading producers, there is left about 15 per cent for the other sixty or more companies in the field.

So far as output is concerned, therefore, consolidations among the major makers would have little effect except to



make competition keener. By getting together the strongest of the non-competitors, "independents" would be able to reduce overhead and distribution expense so that they might hope for a larger part of the total business. It is strongly to be doubted, however, if such combinations of the top notchers would influence seriously the business done by the smaller companies. Individuality rather than price always will be their strongest selling argument.

### Appeal to Specific Class of Buyers

Success for the small producers will be dependent in large measure upon the degree of ability they exert in reaching the relatively small class of buyers who demand "something different" in automobiles. This applies chiefly, of course, to those concerns which are able to operate on a national basis, but there are a good many others in production today which can remain in business indefinitely if they cultivate intensively a circumscribed market. In such a field their low overhead and small selling expense will permit them to cope successfully in a limited territory with the biggest makers, provided their products are good.

Mr. Schwab's forecast of consolidations quite naturally has caused some speculation as to whether he had some definite plans in this direction in connection with his own company.

"I haven't worked out my ideas in detail for I don't know enough about the industry for that, nor do I mean that Stutz is planning any consolidation," he replied when asked whether he had any specific project in mind. "I am convinced, however, that there is a great chance for non-competing lines to get together. They would have a single administration expense and could cut their selling costs. This is a day of consolidation and elimination and the need for it is self-evident in such a great industry."

Mr. Schwab's interest in automobiles is not feigned. Notwithstanding the fact that he sailed for Europe last Saturday and had a mass of details connected with his various interests to clear up before he went, he found time to speak to the N. A. C. C. Tuesday night, to go to the Automobile Show Wednesday, and to spend two hours at a luncheon of Stutz dealers Thursday. He seemed to enjoy the luncheon as much as the most enthusiastic dealer in the room, and he was greeted with genuine affection by the men of the organization he dominates. After he had been introduced rather eloquently by red-headed "Herb" Hyman, sales manager of the Stutz Company, he made one of his characteristic speeches.

## Confidence in Industry Expressed

At the very beginning he expressed grave doubt whether he merited the adjectives used by the "energetic little goldfish" who had introduced him. He had been prepared, he said, to glow with pride when told by a friend that a plate had been placed on the old house in which he was born but had suffered a blow when told the inscription read "Main Street."

"I have been the 'Main Street' of many businesses," he continued, "and I am the 'Main Street' of the Stutz Company with no particular job. This is the last industry with which I shall be associated. All we have ever been connected with have been successful and this must be no exception. We're going to see Stutz through. We're going to make it the most successful company of its kind in the business. We're not in it for speculation purposes. We'll stand back of it like a solid wall.

"We have told President Thompson we'll stand back of him as long as he'll stand back of us and the same is true of the little goldfish who is our sales manager.

"I went to the show yesterday with Mr. Thompson and

ordered four Stutz cars. Hereafter we'll use Stutz cars in New York, Loretto, Bethlehem or wherever we live."

Mr. Schwab urged the entire Stutz organization to operate in a spirit of kindness and friendliness.

"We must treat our customers with consideration," he continued. "Let's see how much we can increase our sales this year. We aren't worrying about the profit sheets. I told that to Hyman once and now I am the best advertised man in the automobile business."

"You dealers can count on us to help you in every way possible. I have the experience and Thayer (referring to E. V. R. Thayer, chairman of the board and former president of the Chase National Bank who sat on the other side of Mr. Hyman) has the money."

His modesty in regard to his own financial resources seemed to greatly amuse his audience.

## Proposed Body Molding Standards Revised

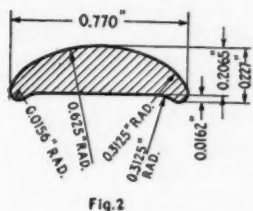
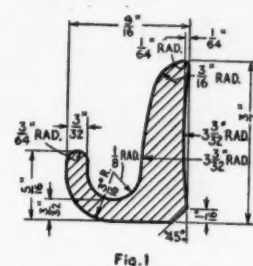
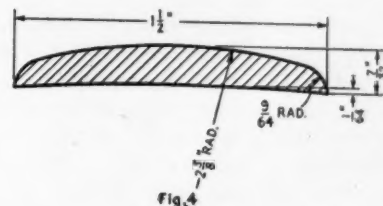


Fig. 3			ESTIMATED WEIGHT PER FOOT, LB.
NO.	A	B C	
B1	$\frac{1}{2}$	$\frac{7}{8}$	0.025
B2	$\frac{1}{4}$	$\frac{1}{2}$	0.025
B3	$\frac{1}{4}$	$\frac{1}{2}$	0.025



**C**RITICISMS received from body builders and passenger car manufacturers who build bodies has resulted in revision of proposed standards for body moldings formulated by the Body Division of the Standards Committee of the Society of Automotive Engineers. It has been found that the demand for ell and tee molding is so limited that it is inadvisable to attempt to standardize any particular styles. On the other hand, the use of belt molding being so extensive, it was decided that more than one type should be included in the standard. The recommendation has therefore been revised to include one type of drip molding and three types of belt molding, there being three sizes for one of these types. The complete report thus covers six types and sizes of molding. The report is given in full in the accompanying illustrations and table.

It should be appreciated that the moldings proposed are standard at the present time, having been selected from those sizes most widely used in present practice. As the molding manufacturers are called upon to furnish an almost unlimited number of types and sizes of molding, practically no two orders of which specify the same cross-section, the advantage to the industry if the proposed types of molding are adopted as standard practice will be appreciated.

**C**ADMIUM plating has been developed by the Westinghouse Electric & Mfg. Co. during the past year as a protective coating for nuts, bolts and threaded parts that were formerly sherardized.

# Car Riding Qualities Tested by Use of New Instrument

Device containing spring suspended weight has been developed by Westinghouse organization. Experiments show value to be derived from pneumatic devices. Air spring inventions have increased in recent years. Designed as supplementary units.

**A**CTIVITY among inventors of air springs is now greater than ever, according to John J. McElroy of the Westinghouse Air Spring Co., who read a paper at the December meeting of the Detroit Section of the S. A. E. He said that the first patent on an air spring issued in this country was granted to Levi Bissell of Newark, N. J., in 1841. Up to 1900 thirty-four patents on such units were issued, the springs being intended chiefly for carriages and railway coaches. An equal number of patents was issued between 1900 and 1910, and the number rose to 200 between 1910 and 1920.

All of the designs evolved up to 1900 provided either for the load being carried entirely on the air springs or for placing the air springs in parallel with steel springs, the idea of placing the air units in series with the steel springs having been conceived last. About 1912, when the automobile had been more or less standardized as regards frame and springs, inventors of air springs came to the conclusion that steel springs and pneumatic tires had come to stay, and that the line of least resistance for them was to so design their devices that they could be readily installed on the completed car, connecting up with the steel springs with which it was fitted.

The present air spring is a typical supplementary spring serving, to a certain extent, the same function as the so-called supplementary spiral springs. However, the deflection curve of an air spring is entirely different from that of the coil spring, which is due to the fact that compression of the air is practically isothermal. The addition of an air spring to the steel half elliptic spring naturally increases the motion of the frame relative to the axle under a given increase in load, and the load-deflection graph, which is a straight line for the steel spring alone, becomes a curve, the combined spring becoming stiffer as the load increases. Unless the air spring is so designed that its compression is definitely limited, the flexibility of the combination is greater than that of the steel alone throughout

the range, though approaching that of the steel spring under heavy loads. Another effect of the addition of an air spring is that the vibration period is increased and the rate of vibration decreased.

## Internal Friction Causes Difficulty

One difficulty with air springs is due to internal friction which produces a tendency to bind or stick. The friction depends upon the leather cup and its expander spring, upon friction at the bearing of the moving part and upon the lubricant.

McElroy showed numerous curves of relative motion between frame and axle when passing over a bump with the ordinary steel springs alone, with air springs in addition at the rear only and with air springs all around. The results are summarized in the following table:

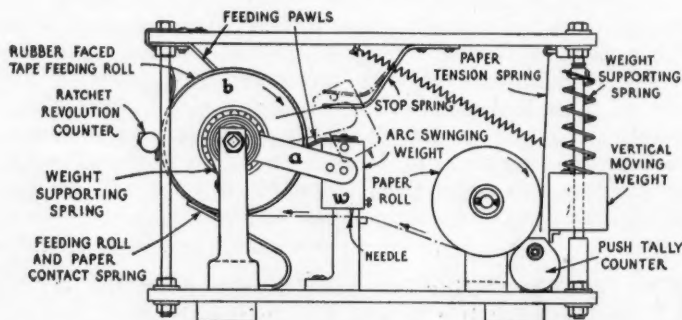
	Compression Above Normal Axle Line	Expansion Below Normal Axle Line	Total Movement
No air springs .....	1 7/16 in.	1 3/4 in.	3 3/16 in.
Rear air springs only ...	1 9/16 in.	2 1/4 in.	3 13/16 in.
Air springs all around..	1 13/16 in.	2 3/8 in.	4 3/16 in.

These figures show that with air springs all around, the upward travel of the axle from its normal position is increased by  $\frac{3}{8}$  in. and the downward travel  $\frac{5}{8}$  in., increasing the total range of spring play by 1 in., which is equal to 30 per cent.

At the higher speeds there is said to be a smaller axle movement with the air spring than without. A testing device of the recording type was built by the Westinghouse Air Spring Co. to record the relative movement between frame and axle on different kinds of road and at different speeds. In a test made with a four-wheel brake car on a Belgian block pavement at 15 m.p.h. the number of vibrations with air springs was 1386 per mile and without air springs 1674. The maximum axle movement increased from  $2 \frac{11}{16}$  in. with steel springs and snubbers to  $3 \frac{1}{2}$  in. with steel and air springs. It has been found that the difference in the cushioning effect with and without the air springs is greatest at about 15 m.p.h.

Owing to the isothermal compression of air under increases in load, the effects of the air spring on the play above and below the normal position are not equal, and in some cases the air spring will even reduce the range of motion of the axle above its normal position while greatly increasing that below the normal position.

McElroy said that tests for riding comfort should be made on a course comprising a variety of road surfaces, both up and down grades and turns. The results depend upon the course and the instrument, which are constant



Outline drawing of the mechanism of the testing instrument



factors, and upon the speed and the ability of the driver, which are variable.

In looking around for a testing instrument the Westinghouse company came to the conclusion that the seismograph principle was unsuitable and that long charts of axle movement were impractical, for although charts of this type may be highly accurate, a correct analysis is too laborious. The type of instrument finally decided upon contains a spring suspended weight. In this connection the problem of damping the free vibrations of the weight arose, but was satisfactorily solved, and the instrument is claimed to be very valuable in comparing different suspensions.

### Weight Arrangement

The weight may either have a vertical motion, or it may swing in an arc of a circle. The latter arrangement is somewhat complicated, but the principle is very attractive because it permits of the use of a low period, flat spiral spring for supporting the weight. In the instrument built the recording apparatus of a pedometer is impelled by an oscillating weight that is supported by a lever arm, the whole mass being partly counterbalanced by an adjustable spiral spring. In the ordinary pedometer the vertical movements of the human body are recorded and then the record of these movements is translated into horizontal distance. The difficult part of this problem is to translate the motion into horizontal distance, but in using the device as a spring tester there is no need for making this translation.

Referring to the outline drawing of the principal parts of the instrument, 85 per cent of the weight is supported through an arm, A, by a flat spiral spring located alongside the friction drum B. This drum is mounted on ball bearings and is actuated from the arm A through pawls and a ratchet, so it moves in one direction only. As the weight descends the tape, which is regular ticker stock, is pulled along by the rotation of the friction drum, and each throw is recorded on the tape as it passes under the weight, which latter carries a small pin which perforates the tape. If the throw is long there will be considerable space between perforations, whereas if the vibrations are short the perforations will be close together and a magnifying glass may be required to count them. By measuring the length of the tape from the first to the last perforation the total distance traveled by the weight is obtained, and by counting the number of perforations the total number of vibrations.

Since it is possible for the tape, which is friction fed, to slip, a positively driven counter is used to check up the tape length. This counter is driven by a small ring gear set into drum B and is actuated by a small overhanging gear on the shaft of the counter.

### Vibrations and Upward Throw Recorded

The instrument was designed to record every vibration during which the acceleration exceeds 10 ft. p.s.p.s. and to record the upward movement of the weight, but not to measure the force of the throw directly. Two factors are therefore recorded, viz., (a) the total number of vibrations during which an acceleration of 10 ft. p.s.p.s. is exceeded and (b) the accumulated upward throw of the weight. The throw of the weight is governed by the force of the impact or shock.

That two factors have to be recorded in order to be able to judge the efficiency of a spring suspension is due to the fact that the auxiliary device works efficiently only in the case of heavy shocks, not affecting the light shocks, and if these latter were increased in number the accumulated upward travel of the weight would be increased and indicate poorer riding qualities.

It is the practice of the Westinghouse company to test all cars that come into their service station over a regular mile course, both with and without any auxiliary suspension devices with which they may be equipped. All tests are duplicated, and some triplicated, to avoid errors. As the route is well marked with wheel tracks it is not difficult for different drivers to follow exactly the same course.

McElroy said that tests with the instrument described on cars equipped with different types of auxiliary suspen-

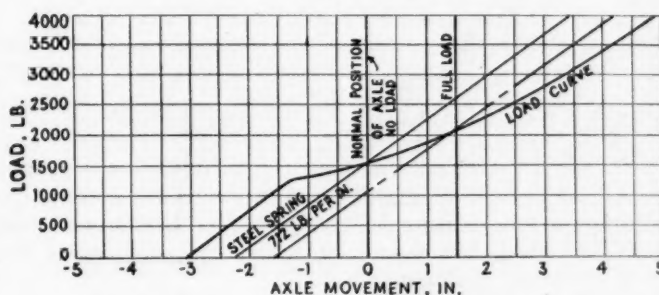
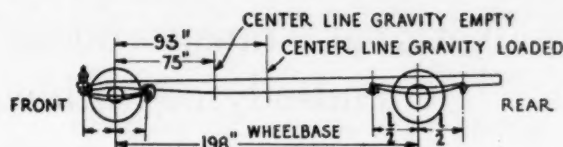


Diagram showing spring action with and without air spring

sion devices showed that all of them improved the riding qualities.

During the discussion McElroy explained that the pressure in the air springs was generally carried at between 60 and 70 lb., varying with the weight of the car, and that air had to be renewed on the average every two months. The flexibility of most front springs is 1 in. to about 450 lb., and if air springs are added this is increased to 1 in. to about 250 lb. initial flexibility, decreasing as the load increases and approaching the flexibility of the steel springs alone under high loads. Rear springs when fitted with air springs have an initial flexibility of 1 in. to about 165 lb., and it is often necessary to add a leaf or two in order to reduce the initial flexibility and prevent excessive spring motion.

**M**OST of the automobile book literature published up to date deals with technical phases of the general movement, and comparatively little has been issued on the economic problems underlying the manufacture of motor vehicles. One reason for this undoubtedly is the fact that the economic aspects of the industry change so rapidly that they can be discussed to much greater advantage in periodical publications than in books.

A book dealing specifically with the economic bases of the Swiss automobile industry but also containing a great mass of interesting data on the development of the industry in all of the chief industrial countries, including the United States, has just been published by A.-G. Neuen-schwander'sche Verlagsbuchhandlung, Weinfelden, Switzerland (Wirtschaftliche Grundlagen der Schweizer Automobilindustrie, by Dr. Adolf von Salis-Soglio).

The book is divided into two parts, Part I dealing with the home and foreign markets of the Swiss industry and Part II with the chief factors affecting automobile manufacture in Switzerland, including the fuel question, factory models, car types, list prices and tariff policies. It appears that the work was written as a thesis for a degree from the University of Berne and forms one of a series of publications on Swiss industrial and commercial problems.

# Transport Experts Approve Proposals of Automotive Industry

National Transportation Conference adopts resolutions embodying principles favored by vehicle manufacturers. Fair taxes urged.

By Norman G. Shidle

**O**NE HUNDRED AND FIFTY leading transportation executives, representing every form of carrier, approved with only minor changes in phraseology two committee reports of major importance to the automotive industry at the National Transportation Conference held in Washington, Jan. 9 and 10, under the auspices of the U. S. Chamber of Commerce.

These reports, containing numerous recommendations in accord with principles supported by automotive executives for some time, were on "Relation of Highways and Motor Transport to Other Transportation Agencies" and "Taxation of Transportation Agencies." Both had been made public on Nov. 2, but definite action on them came at the end of the present conference when the report of the resolutions committee, embodying the substance and much of the wording of the two original reports, was adopted by the convention.

The recommendations regarding correlation of motor transport with other carriers were prepared by a committee of which Alfred H. Swayne, vice-president, General Motors Corp., was chairman, and of which D. C. Fenner, Mack Trucks, Inc.; Arthur T. Waterfall, Dodge Bros.; L. W. Childress, president, Columbia Terminals Co., St. Louis, and Ralph Matthiessen, president, Motor Haulage Co., New York, were the other automotive members.

In presenting the findings of his committee, Mr. Swayne emphasized the usefulness of the motor truck as a means of relieving terminal congestion in metropolitan areas and pointed out that the plans proposed could be accomplished with little if any legislation.

## Resolutions Embody Automotive Proposals

The resolutions adopted as a result of the findings of the Swayne committee embody specific statements regarding the high economic value of the motor vehicle; advocacy of organized motor transport, coordinated with rail service, as a means of relieving terminal congestion; recognition of the separate functions of various types of carrier; request for regulation of motor vehicle common carriers by existing authorities; and demand for highways adequate to carry traffic determined to be economically justified.

Full details of the original report appeared in *AUTOMOTIVE INDUSTRIES* of Nov. 15, while the resolutions finally adopted by the conference are given in an accompanying box.

The resolutions on "Taxation of Transportation Agencies" urged that each form of transportation bear its fair share of the burden of public expenditure; that taxation of transportation agencies be simplified; that taxes be based on relation of gross to net earnings rather than on

invested capital; that the cost of maintaining the highways be met by special taxes levied against road users; and that highway construction and maintenance be coordinated under centralized administrative agencies to eliminate waste and to secure efficiency. The resolutions adopted followed the original report closely.

Automotive executives who were members of this committee were A. J. Brosseau, president, Mack Trucks, Inc., and Roy D. Chapin, chairman of the board, Hudson Motor Car Co. Full details of the taxation committee's recommendations are to be found in *AUTOMOTIVE INDUSTRIES* of Nov. 22.

Both resolutions embody many principles which car and truck executives have been supporting for some time, and the approval of this group of transportation experts is a striking tribute to the broadness of the automotive industry.

## Tax Recommendations Accepted

The taxation recommendations were accepted by the gathering of transport executives practically without discussion. Thomas H. MacDonald, Chief, U. S. Bureau of Public Roads, said that there may be some tendency in certain places to tax transportation too heavily, when funds might be raised to better advantage from other sources. He pointed out that the income derived from motor vehicle owners in license fees, gasoline taxes and other special revenues is growing every year and that the sums available from these sources have increased materially in the last twenty-four months.

Some question was raised as to the definition of the term "gross net tax" which appeared both in the original report and the final resolution on taxation. Replying to this query, Mr. Brosseau, who presented the taxation report, replied that an exact definition could be given only by going into great detail and referred his questioner to the report of the New York State Committee on Taxation and Retrenchment, mention of which was made in the recommendations of the committee for which Mr. Brosseau spoke. He pointed out briefly that the idea of the recommendation is to tax more heavily the railroads whose earning power is greater and thus to allow the poorer roads to exist.

Presentation of the report on "Relation of Highways and Motor Transport to Other Transportation Agencies" was followed by considerable discussion but very little opposition. Some transportation men present differed with details of the plan and questioned the definition of terms in specific instances, but not the fundamental principles involved in the recommendations.

A. E. Beck, general traffic manager, Merchants and



# Relation of Highways and Motor Transport to Other Transportation Agencies

## *Resolutions Adopted by National Transportation Conference*

1. The motor vehicle has proved its unquestionable value in our economic system, having greatly extended the farmer's field of operation, brought much additional land under cultivation and new sources of raw materials within economic reach of markets, quickened the industrial life and facilitated the processes of distribution.

2. The congestion of transportation today centers around the terminal areas of our great cities, where the railroads find the greatest difficulty in keeping pace with the public need, although their main tracks have sufficient capacity for the movement of more freight than is offered to them.

3. In spite of the foregoing fact, the railroads are constantly faced with a demand for more and better terminal facilities in the face of prohibitive real estate values and other stupendous obstacles to expansion.

4. The best interests of the public and of all transportation agencies lie in cooperation and the greatest opportunity for this cooperation is in the terminal areas.

5. Store-door delivery by motor truck is the greatest contribution which can be made to the solution of the terminal problem.

6. Organized motor transport can also relieve the railroads of various forms of uneconomical service, such as trapcar service, switching between local stations and short-haul shipments within the terminal area. This will reduce yard congestion and release many cars for more profitable line haul.

7. To secure the fullest benefits from this organized motor transport, will require the utilization and further development of modern mechanical equipment.

8. Outside of the terminal area it is to the public interest, as well as to the interest of

the respective carriers, that the economic limitations of each type of carrier be recognized, that the railroads be permitted to discontinue unprofitable service to which the motor is better suited, and that the motor abandon its efforts to handle general traffic over uneconomic distances. Unprofitable steam railroad service can in some cases be successfully replaced by the use of self-propelled railroad motor cars.

9. Rail lines can often advantageously extend or supplement their service by motor bus and motor truck lines, and in States where this is now prohibited such restrictions should in the public interest be abolished.

10. To insure to the public reliability of service in all forms of motor transportation—sound financial organization, public regulation and continuous service are necessary.

11. The proper regulation of common carrier operations of motor vehicles, including the rates, should be handled by the existing authorities which now control the operations of other public carriers. It is believed to be to the best interests of all concerned that proper regulations of traffic and of size, weight and speed of motor vehicles by States and municipalities should be made uniform.

12. Trunk highways should be capable of carrying any vehicular traffic that is economically justified and should be constructed with particular attention to the proper design of well-coordinated highway systems.

13. Investigations now under way by the United States Bureau of Public Roads, State highway departments and other agencies to determine more fully the economic rôle of the motor vehicle should be vigorously prosecuted.

## Taxation of Transportation Agencies

*Resolutions Adopted at National Transportation Conference*

1. Each form of transportation should bear its fair share of the burden of public expenditure.

2. Taxation of common-carrier transportation agencies should be simplified as far as possible.

3. Taxes on regulated common carriers operated for hire should bear a definite relation to gross and net earnings rather than to invested capital.

4. This requirement can best be met in the case of steam and electric rail common carriers by the imposition of tax on gross earnings together with a graduated tax on net earnings

in lieu of the present systems of taxation. Pending full regulation of the motor common carrier, such increases should be made in taxes now levied against it as will bring them to an amount equitably proportionate to that which may be assessed against the other carriers.

5. The entire cost of maintaining the improved highways of the country should be borne from special taxes levied against the road user. Such taxes should be used for no other purpose.

6. Coordination of highway construction and maintenance under centralized administrative agencies is urged to eliminate waste and secure efficiency.

Manufacturers' Association of Baltimore, supporting the practicability of the plans for coordination outlined by the Swayne committee, told of the success achieved by the Pennsylvania Railroad in operating trucks in connection with its freight service between Baltimore and the Maryland coast.

State highways parallel the railways in the area mentioned and independent truck operators took advantage of this fact to start competitive freight carrying lines. Finally the railroad stated to the I. C. C. that it would have to discontinue the lines because of the terrific competition.

Because of the importance of such a step to Baltimore business men, the merchants' association asked the railroad to delay action until a thorough investigation of the situation could be made. This was done and it was found that neither transport agencies could make money under the competitive conditions which had been established.

The association recommended to the railroad that it coordinate the water, truck and rail lines available. The suggestion was adopted. The existing truck lines were bought out by a corporation which contracted with the railway for freight delivery between Baltimore and the shore of Maryland. This was done because of the legal obstacles in the way of the railroad should it attempt to operate truck lines under its present charter.

### Trucks Improve Service

The result, Mr. Beck said, has been better service for Baltimore merchants than they ever had before and the development of greater profit for the carrier. Actual store-door delivery is not yet in use because it is too expensive to take the time necessary to unload express trucks. The trucks deliver to central warehouses in each town.

The plan also has resulted in an increase in freight, although the reason for this is not apparent. Further experiments in the coordination of transportation facilities are to be tried in the Baltimore section, Beck stated.

Discussing store-door delivery, Mr. Beck deprecated the direct opposition to granting charters for truck lines generated by railroads in many States. The rail carriers claim that the motor lines give destructive competition. The railroads would do better, Mr. Beck thinks, to meet

with the truck operators in any given case and try to work with them to form some plan for constructive cooperation. Trucks have come to stay, Mr. Beck said, and he is sorry to see that some States have ruled that truck competition with railroads shall not be allowed.

Adding further evidence in favor of coordinating truck and rail facilities, Robert C. Wright, general traffic manager, Pennsylvania R. R., said that the roads already have reached the conclusion that the motor truck is a real economic factor and that the chief question today is "How can it be utilized to the best advantage?" His analysis indicates three chief functions for the truck:

1. Short haul l.c.l. traffic
2. Terminal service
3. Door-to-door delivery

### Short Haul Tests

Truck usefulness can be tested most readily, Mr. Wright pointed out, in short haul work, as this service requires no special terminal equipment. He told of an installation which the Pennsylvania is operating at the present time between Philadelphia and Downton as a test case. The trucks involved are being operated by a separate trucking company under contract with the railroad.

Local freight stops have been eliminated for the freight train, which now makes only four stops on the run. The train leaves freight at each of these four express stops. Trucks pick up the merchandise and deliver it to various local terminals along the way. The merchant then is required to arrange for delivery from the local station.

While this installation is still in the experimental stage, Mr. Wright said that it has been very successful thus far and there is every indication that it will be continued. This system, he emphasized, has no bearing on the public, as it simply is a measure to secure more efficient operation within the railroad system.

While rearrangement of facilities is necessary if trucks are to be used for terminal service to any great extent, Mr. Wright said that he expected to try out motor vehicles for this purpose in the near future. He believes in the store-door delivery idea, but stated emphatically that such operation should not be undertaken by the railroads.



This last statement of Mr. Wright's was seconded by W. H. Lyford, vice-president, Chicago & Eastern Illinois Railway Co., who said that he expressed the opinion of nearly all railway executives when he advocated handling of store-door delivery through the medium of independent hauling companies rather than by the railroad itself.

W. H. Chandler, representing the National Industrial Traffic League, strenuously opposed the views of these railway executives as regards the agency which should operate the truck lines to be coordinated with the railroads. He urged very strongly that the railroads extend their facilities to include store-door delivery and that they assume complete responsibility to the shipper for such service. He said that the roads might get trucking companies to operate under contract for them if they cared to do so, but believes that the responsibility for this extended service should be shouldered by the roads, as is the case in England.

F. C. Horner, General Motors Corp., outlined the success which British roads have had in operating trucks as complementary means of transport and told some of the economies which have been achieved. His remarks in substance were similar to those made in his paper read before the Transportation Meeting of the S.A.E., which was published in *AUTOMOTIVE INDUSTRIES* of May 3.

#### Limited Speeds Advocated

Limitation of truck speeds to 12 m.p.h. was advocated by Joseph X. Galvin, president National Team & Motor Truck Owners' Association, Inc. Other recommendations made by Mr. Galvin as the representative of his association were: that uniform regulations for operation of trucks be in force everywhere; that overloading be opposed; that States demand every truck to be covered by adequate insurance; that laws be enforced strictly and constantly instead of spasmodically; that manufacturers sell trucks only to responsible persons in order to prevent "fly-by-night" operators from entering business without knowledge of costs; that merchants refrain from employing irresponsible haulage contractors.

The statement of the committee that organized motor transport can relieve terminal congestion was questioned on the ground that the streets are already so crowded as to render difficult the use of any more vehicles in the terminal areas. The question was asked of the committee, "By putting on a lot of trucks in an effort to relieve freight congestion in the terminals, wouldn't we be jumping from the frying pan into the fire by tying up street traffic?"

#### Load Efficiency Increased

This objection was met by Mr. Swayne and Mr. Brosseau with the statement that proper organization will increase load efficiency of trucks, thus reducing the actual number of vehicles needed; also that organization will permit trucks to be operated in terminal areas during the night and at times when other traffic is not on the streets. It was pointed out, also, that the committee recommends removal of terminals to outlying districts wherever possible.

Mr. Horner showed that in England the terminal haulers are getting an average truck load efficiency of about 60 per cent as against an average of something like 35 per cent in this country. B. F. Fitch, president Motor Terminals Co., confirmed Horner's view and said that recent detailed studies indicate that an increase of 1000 per cent in tonnage flow on the vehicular thoroughfare is possible in New York if organization conditions, now prevalent in Cincinnati, were applied.

Mr. Swayne emphasized that, because of the great number of people engaged in transportation, store-door ser-

vice, although simple in operation, will have to be put into effect gradually. It will be necessary, he said, to educate the shipping public as well as the transportation employees if confusion is to be avoided.

Trials of the plan will be made this year by some members of the committee in selected places, Mr. Swayne said, in cooperation with the Department of Commerce.

#### Local Organizations Desirable

Mr. Childress, president, Columbia Terminals Co., voiced the opinion that a large national body to handle store-door delivery in cooperation with the railways is not feasible because of the huge organization and operating problems involved. He advocated handling the situation through local companies as being the best means of actually accomplishing some results within a reasonable length of time.

T. C. Powell, vice-president, Erie Railroad Co., said that while store-door delivery is theoretically an excellent thing, there are certain conditions under which it will not work. He pointed out that the St. Louis system is not applicable in New York and outlined the method which had been adopted to meet the special requirements of the latter center.

Few receivers of freight in New York, Mr. Powell said, have sufficient storage capacity to accommodate a full carload of freight, because of the high real estate values. These merchants are in the habit of relying on the railroads for a certain amount of warehousing facilities. The plan worked out for New York involves two choices for the receiver: he may designate whether the shipment should be left in the warehouse until he can call for it conveniently within the free time or pay storage; or he may have it delivered to his own warehouse or to an inland freight station adjacent to his business community.

#### Resolutions Committee

The resolutions committee was as follows: Judge Edwin B. Parker, chairman, Empire Mixed Claims Commission United States and Germany; Thomas C. Akeson, National Grange, Frederic A. Delano, former member Federal Reserve Board; F. H. Dixon, Princeton University; W. N. Doak, vice-president, Brotherhood of Railroad Trainmen; Carl R. Gray, president, Union Pacific Railroad; Dwight B. Heard, president, Dwight B. Heard Investment Co.; P. W. Henry, American Institute Consulting Engineers; R. P. Lamont, president, American Steel Foundries; E. H. Outerbridge, chairman, Port of New York Authority; A. C. Pearson, vice-president, United Publishers Corp.; George A. Post, president, George A. Post Co., Inc.; Gray Silver, representative, American Farm Bureau Federation; Andrew Stevenson, Inland Fuel Co.; Alfred H. Swayne, vice-president, General Motors Corp.

**I**N two of the latest designs of Knight type engines (Panhard and Daimler) the cast iron sleeves originally used in these engines have been replaced by steel sleeves, which latter present several advantages. These sleeves are made only about half as thick as those of cast iron and therefore improve the balance. The sleeves are made of seamless drawn tubing and have the driving lugs welded on.

The ports are made very much deeper than in cast iron sleeves, with thin bridges across them, which obviates trouble with the piston rings. Owing to the increased port area it is possible to attain higher engine speeds. To prevent any tendency to seizing between the two steel surfaces, the inner surface of the outer sleeve in the Panhard engine is given a thin coating of white metal.

# Bureau of Standards Improves Brake Lining Test Apparatus

Adds device for automatically maintaining constant load, makes parts more rigid to lessen vibration, changes method of support and employs telemeter for torque measurement. Attachment for grinding drum surface also included. Life of facings tripled.

By Herbert Chase

**T**ESTS of brake linings at the Bureau of Standards which have been in progress for some two years past are understood to have resulted in tripling the average life of brake linings made by a large number of American manufacturers. Apparatus designed by the Bureau for making durability and other tests is now in use by many large purchasers of linings as well as by the manufacturers of this product and there is no doubt whatever that purchasers, as well as car and truck users, have saved many thousands of dollars through intelligent application of testing facilities.

For many months it has been apparent that the original brake lining test equipment, which purposely was made as simple and inexpensive as possible in order to insure its wide use, could be improved in various respects. As a result, members of the Bureau staff have redesigned this equipment and are still engaged in trying out the new apparatus, full details of which probably will be released about two months hence.

AUTOMOTIVE INDUSTRIES is now able to give its readers an advance description of the new apparatus, which may

still undergo some slight revisions before final adoption as a recognized standard device for brake lining tests. In so doing, reference will be made to the original form of apparatus which is now in quite general use and has already been described in these columns.

## New Apparatus Is More Rigid

Fig. 1 shows a modified form of the original apparatus and Fig. 2 the present revised design made up in duplicate. It will be noted that the latter is a more rigid and robust type which is less affected by vibration than the earlier form, and that the frame is supported on two ball bearings running on the drum shaft instead of floating on the drum and being supported by the counterweighted cable attachment formerly used.

With the latter arrangement it is possible to dispense with the platform scale formerly employed for measuring torque and to use in its place a pendulum with adjustable weights. Counterbalance weights make it convenient to equalize the pressure on upper and lower arms.

Another feature is the use of an electric telemeter which

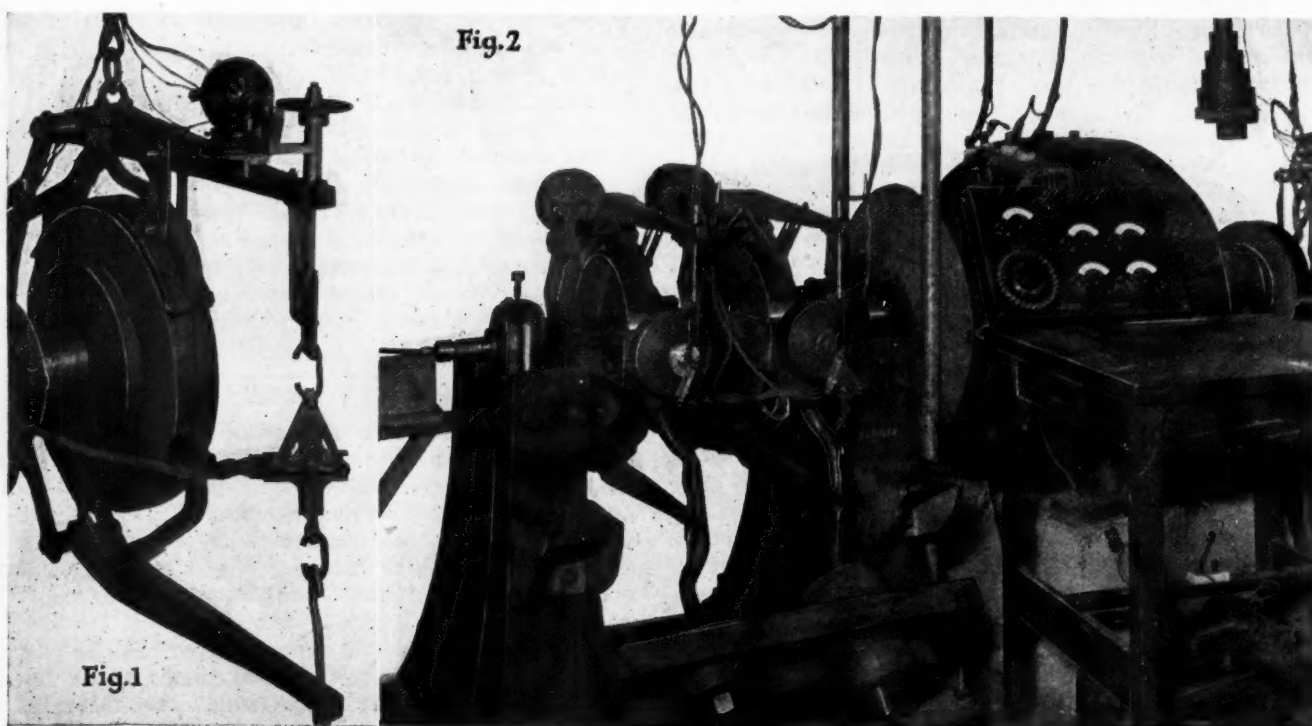


Fig. 1—Modified form of original brake lining test apparatus with telemeter and automatic load regulator added. Fig. 2—Latest form of apparatus for brake lining tests developed by Bureau of Standards. Note use of heavier frame and change in method of mounting. Automatic load regulator not shown



is understood to be more accurate and reliable than any ordinary commercial spring balance for measuring the pressure on the brake shoes. This device, the construction of which is described below, was developed by the Electrical Division of the Bureau for other purposes, but is said to have proved to be admirably suited for the measurement required in this case. It is pointed out that the rack and pinion used in dial type spring balances formerly employed wear rapidly and that the indicating hand oscillates so badly as to render precise readings difficult.

Still another feature of the newer form of brake is the device used for automatically holding the desired pressure on the brake shoes. This takes the place of the manual adjustment formerly employed and not only requires less attention upon the part of the observer but assures a more nearly constant pressure on the shoes. If a number of tests are to be run simultaneously one operator easily can handle several machines when they are equipped with the automatic regulator.

### Automatic Regulator Used

This automatic regulation is effected by a small electric motor attached to the upper pressure arm. On the shaft of the motor is a worm which engages with a worm wheel attached to a nut on the rod which connects the upper pressure arm to the linkage between it and the lower pressure arm. The motor is started, stopped and reversed by a mercury contact device actuated by the change in position of the torque arm.

Arrangement of the automatic feature is the same as that shown in the cut, Fig. 1, whether the control is attached to the newer or older type of testing equipment.

The brackets attached to the pedestals of the newer form of testing rig, clearly seen in Fig. 2, are for supporting a grinding attachment used to insure a true and smooth surface on the brake drum preceding each test of a new sample of lining.

In the form shown in Fig. 2 the brake is designed to permit of various modifications being tried out before final recommendations are made concerning the best arrangement for commercial applications. Provision is made for changes in the length of pressure arms and location of fulcrum pins, a fact which accounts for the extra bosses and holes seen in the photograph.

The telemeter or device for measuring the pressure on the shoes includes an A-shaped frame, forming a part of the linkage between the pressure arms, and the electrical instruments shown on the panel resting on the table seen in Fig. 2. This is essentially a device for measuring the change in electrical resistance which results when various pressures are applied to a pile of carbon disks.

### Pressure Measuring Device

In this case there are two piles of disks arranged in a Wheatstone bridge circuit as shown in the diagram, Fig. 3. A and B are the carbon piles, C and D fixed resistances, E a milli-ammeter and F a variable resistance for regulating the current applied to the bridge by the battery. G is an ammeter by means of which the flow of current is measured. With F set to give a constant reading on G, the reading on E will vary with changes in the resistance in A and B. This change is brought about by varying the pressure on the carbon piles and the variation is substantially proportional to the change in pressure. Hence E can be calibrated to read directly the pressure on the disk in pounds, which, in the case in point, is the torque which it is desired to measure.

The telemeter is easily calibrated by the use of check weights. It has been found to hold its calibration for long periods of time and is regarded as a sturdy and dependable device for the purpose in hand.

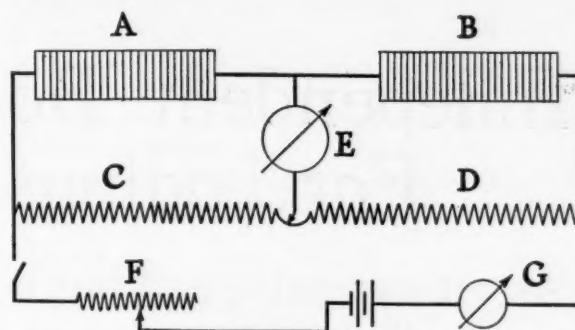


Fig. 3—Diagram of electric circuit of the telemeter used for torque measurement and applicable to a variety of other purposes

This same type of instrument made up in various forms has been used for a variety of purposes other than that mentioned and may well see wider application in automotive testing work. Of particular interest is its application in measuring the stresses set up in structural members when they are loaded in actual service. In this case the telemeter is applied in much the same way as an extensometer. From the readings obtained with it and a knowledge of the modulus of the section the actual unit stresses are computed readily.

Telemeters have been used already in measuring stresses in structural parts of the Navy's dirigible, Shenandoah, and for the same purpose in airplanes in actual flight. Tensions in cables and tension and compressive stresses in other members are learned without difficulty. Even the stresses due to impact can be measured by use of an oscillograph in combination with the telemeter.

This device may afford a means of determining the stresses set up by shock in various parts of automotive vehicles and thus provide a better basis for the design of parts. It is, in any case, worthy of consideration in this connection.

### New Type of Cap Screw

BY substituting steel with a higher carbon content for that formerly used, the Victor-Peninsular Co. has added materially to the strength of its cap screws. Ordinary screw stock contains from 0.08 to 0.15 per cent of carbon, while the material now used by the Victor company contains from 0.20 to 0.27 per cent of carbon and from 0.40 to 0.60 per cent of manganese, the rest of the components being in accordance with S. A. E. specification No. 1025.

This company manufactures cap screws by the up-setting process, the head being formed in a cylinder somewhat greater in diameter than the distance across the corners of the finished hexagon. This is done in a double blow cold header, and is followed by an operation in which the wrench surfaces are formed by punching, the blank being forced through a die that shears off the excess stock and leaves the finished hexagon. The head is then finished by a shaving operation in which the top is chamfered and the shoulder under the head is squared up.

When the unthreaded portion of the shank is no longer than its diameter, the threads are rolled, but where a long shank is specified die-cutting of the thread is necessary. Rolled thread blanks are made from wire which is slightly smaller in diameter than the nominal size. The unthreaded portion is up-set to the desired nominal diameter at the time of the heading operation. As roll threading displaces rather than removes the metal of the shank, the finished thread diameter is brought up to the correct size, the result being standard size threads and a full size shank.

# Independent Body Builders Profess Forebodings About Future

Assert percentage of business available to them at profit so small they may have to enter other fields. Advocate combination to make and market own cars.

**O**FT repeated assertions that production of closed types of passenger cars had been limited in the past year by a shortage of body building capacity were strongly refuted by body manufacturers who gathered in New York last week for the mid-winter meeting of their association. It was contended not only that present facilities are adequate to the needs of the automotive industry, but that there are in the country many good-sized concerns which have been operating for the past six months on part time because of a dearth of orders.

As a matter of fact, the meeting of the association was shrouded in unmistakable gloom. Heads of numerous semi-production companies with a capacity of from 25 to 50 bodies a day made no secret of the pessimism with which they view the future.

Several of them asserted with emphasis that unless conditions change quickly they propose to get out of the business while the getting is good. Others intend to use part of their plant capacity for the manufacture of other things.

At the meeting there was open advocacy of a plan to form a combination of body builders who would assemble an identical chassis at their plants and equip it with their own bodies, each marketing the product in a limited territory. It was felt that no difficulty would be experienced in interesting some of the prominent parts makers in such a project, for the position of the parts manufacturers is similar in many respects to that of the body builders. Such a consolidation would permit the purchase of materials in large quantities, low selling costs and factory service.

## Three Classes of Manufacturers

It was pointed out that there are three types of body manufacturers:

1. The largest producers, in the same general class with Fisher.
2. Companies owned or controlled by automobile manufacturers and thus assured of a steady business.
3. Independents.

It is estimated that, including Ford, the major producers and the plants controlled by automobile manufacturers are assured of about 95 per cent of the body building business, leaving only 5 per cent for the independents. On the basis of last year's passenger car production of 3,625,000, there would be a demand for a little less than 200,000 bodies to be divided among all the independents in the field.

This is a very respectable total and would assure a reasonable degree of prosperity to the independent body builders if it was divided evenly according to their

capacity, but such a condition has not prevailed in the past and probably will not in the future.

Most of the larger independents contend they have been suffering from lack of profits, the same malady which has afflicted other branches of the parts business. Those in the passenger car field are in a worse plight than a good many other parts manufacturers, because they have no replacement market. Another parallel is to be found in the fact that the biggest of the automobile manufacturers are making themselves more and more independent of parts producers, except tire makers. This has left body builders dependent in large measure upon the relatively small builders of automobiles.

## Low Prices Demanded

One body manufacturer at the meeting complained that he had been called upon to make an investment of \$500,000 in tools and materials to fill an order from an automobile company which had liquid assets of less than one-tenth of that sum.

Body builders are virtually unanimous in their complaint that motor car producers, under the lash of fierce competition, have been constantly demanding lower and lower prices until earnings have reached the vanishing point. They assert that companies which have been their customers for years feel no compunction about taking their business to some one else if they can effect a small initial saving by so doing.

The passenger body section of the Automobile Body Builders' Association has decided to take up seriously the question of cost accounting in the hope that by means of education along these lines some of the uneconomic competition in this branch of their business can be eliminated. They are confident that some of the companies which have the greatest volume of orders have little actual knowledge of costs and are doing business at no profit, if not at an actual loss.

If this evil can be eradicated it is hoped that more satisfactory conditions can be brought about under which passenger car makers will have greater respect for their sources of body supply. It will then be possible to convince them that bids filed for a certain run were based on sound business principles.

The effort which has been under way for the past two years to agree upon a uniform contract also will be continued. It is felt that this would contribute considerably to placing the business on a more stable basis.

Better informed competition would inspire confidence of customers and make them more amenable to reasonable prices.

Custom body builders are not so much concerned about the future as the independent semi-production com-



panies. They feel that there always will be enough demand for custom work to keep them reasonably busy, and their operating costs are not so heavy as those of larger concerns. Their plants are small in most cases and they do not suffer heavy losses from periods of comparative inactivity. A good many of them have capitalized names which became synonymous with quality back in the coach building days.

Some of the larger independents contend, on the other hand, that quantity production bodies used on medium-priced cars are about as good as those which are custom made.

Builders of commercial bodies are not especially alarmed about the outlook for the future, because they deal chiefly with the users rather than the makers of motor vehicles.

So long as the present custom of selling commercial chassis without the body continues there will be ample opportunity for diversified operations in this field with an unlimited market.

Passenger car manufacturers probably will take serious exception to the arguments of the larger independent body producers, but it cannot be denied that at least one branch of the body building industry has reached a turning point and that unless conditions speedily improve a good many of the men engaged in it will seek other fields which are more lucrative.

Such a move might prove embarrassing to many of the smaller automobile concerns which cannot afford to build their own bodies, especially in view of the steadily increasing demand on the part of the public for closed cars.

## French Engineers Outline New Development of Lasche's Formula

WHAT is claimed to be a development of Lasche's formula for the friction of bearings, which was given in these columns in the series of articles on Lubrication, published some time ago, has been developed in France by engineers of the Breguet firm. This company had the contract for installing geared turbines of 25,000 to 30,000 hp. in certain French warships. As the bearing losses in such installations are an important item, it was decided to make some experiments to determine the variation of this loss with different factors, and from the results obtained the following formula was derived:

$$\text{Friction Loss in Hp.} = k S v \frac{V}{D-d} (100 + 3p + P v),$$

where

$S$  is the projected bearing area in square meters;  
 $v$ , surface speed in meters per second.

$V$ , Engler viscosity of the oil at a Centigrade temperature  $T$  ( $= 2/3 t_e + 1/3 t_o$ ),  $t_e$  and  $t_o$  being the temperatures at which the oil enters and leaves the bearing.

$D, d$ , diameters of the bearing and of the shaft journal in millimeters.

$p$ , load on the bearing, in kilograms per square centimeter.

$P$ , pressure on the oil, in kilograms per square centimeter.

$k$ , a coefficient depending on the circumferential speed  $v$  of the journal as shown by the curve Fig. 1.

This formula is applicable within the following limits,  $v = 5-45$  m.p.s.;  $p = 0.225$  kg. p. sq. cm.;  $P = 0.1-1.5$  kg. p. sq. cm.;  $D-d = 0.2-0.5$  mm.

From this equation the following conclusions may be drawn:

The frictional moment or friction torque increases with the load.

The frictional moment, which is practically independent of the oil pressure at low speeds, increases rapidly with this pressure at high peripheral speeds. In practice 0.5 kg. p. sq. cm. should not be exceeded.

The frictional moment increases greatly with the peripheral speed between 5 and 20 m.p.s. (Fig. 1). Thereafter it increases less rapidly and it seems to remain constant beyond 35 m.p.s.

The frictional moment decreases if the clearance  $D-d$  is increased. But the requirement of smooth operation of the mechanical parts at high speeds limits this clearance. The latter must be limited to that necessary to obtain a good flow of oil.

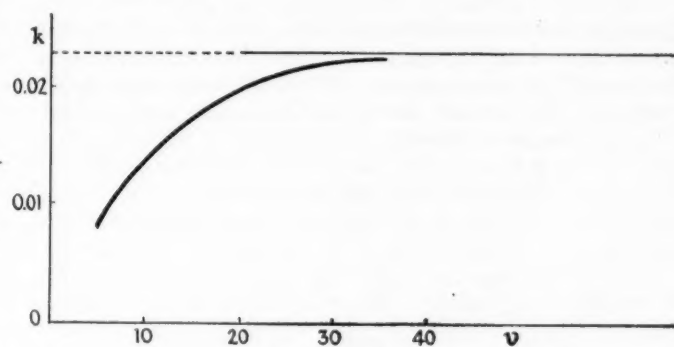


Fig. 1  
Value of constant  $k$  as a function of the peripheral speed

A clearance of 0.42 mm. was considered satisfactory for the bearings under test, which were 12.6 in. in diameter by 9 in. in length, to assure a flow of oil of 2800 liters per hour through each one of them under a pressure of 0.5 kg. p. sq. cm. The load  $p$  of these bearings may attain 9.4 kg. p. sq. cm. in service at a surface speed  $v = 35$  m.p.s.

An endurance test was made with a load  $p = 12.2$  kg. p. sq. cm. at a speed  $v = 42$  m., that is, under an overload of 30 per cent, at an "overspeed" of 20 per cent. The end bearings were then shortened 46 per cent, which permitted of increasing the load on these bearings to 22.5 kg. p. sq. cm., and a new endurance test was then run at the same speed. The bearings stood up perfectly under these tests.

## A Gage for Cylinder Bores

A GAGE for measuring and checking cylinder bores has been placed on the market by Grove Mfg. Co. The instrument is applied to the top end of the cylinder and the hand is brought to the zero mark by turning the adjusting screw. If the top of the handle is then moved slowly to and fro, the hand can be seen swinging up to the zero mark and away from it. By turning the gage around and moving it down in the cylinder, each time giving the handle a slight movement before an observation is taken, the taper and out-of-roundness of the bore can be quickly ascertained. The body of the gage is made of aluminum, the contact points and adjusting screw are of hardened steel and the bearings are bushed.

## Progress in Parts Design Is Illustrated in New Products

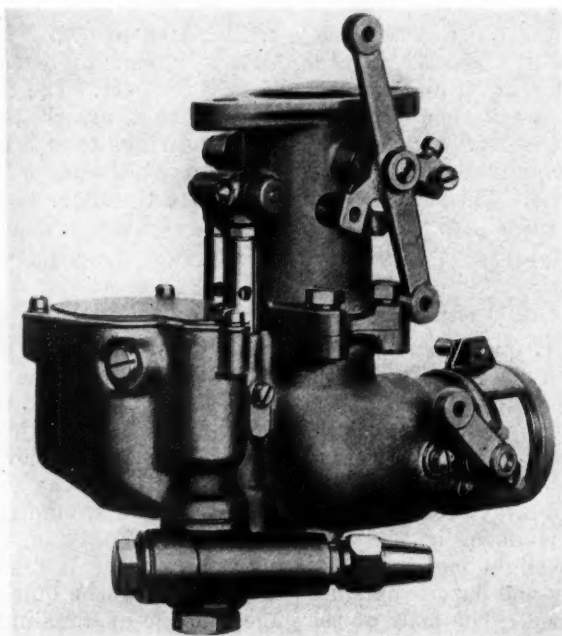
*Units recently announced include a special carbureter for trucks, a high pressure chassis lubricator, novel British tires, two types of shock absorbers, and a vaporizing system.*

**E**CONOMY, ease of operation and service, and comfort for the car user, are features embodied in nearly all of the automotive parts recently announced. The new products range all the way from chassis lubricators to shock absorbers, but each one marks an advance along one of the lines indicated.

**A**SPECIAL carbureter for trucks has just been put out by the Zenith-Detroit Corp. It is similar to the standard Zenith carbureter, but a few changes have been made to meet the rigorous conditions of truck and motor bus service. There are fewer moving parts in the float mechanism, heavier throttle and strangler mechanisms, a more efficient filter and a new easy starting device.

In the new model the float mechanism has been entirely redesigned to eliminate the spinning motion which results in a considerable wear to the needle valve at its seat, as well as to the needle valve lever weights and their brackets and axles. Instead of two lever weights and axles only a single lever weight and axle are now used. The throttle shaft is heavier and is made of steel, with a ground finish to fit in the long, brass bearing.

The bearings are protected from dust and dirt, to reduce throttle shaft wear, by felt washers held under compression. The strangler valve is now twice as heavy as in the standard carbureter. A new design of filter is incorporated, with a much larger area. The screen can be removed for cleaning without disturbing the gasoline connection.

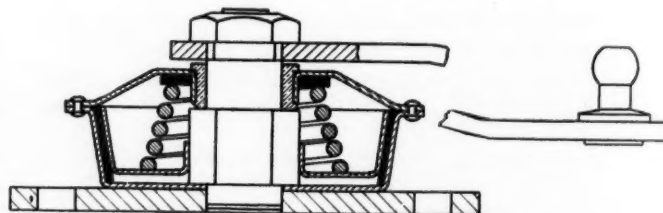


*Zenith carburetor for commercial vehicles*

For easy starting of large engines, particularly by hand, a starting well is provided in addition to the usual idling well. The starting well is alongside the idling well. The idling well connects with the fuel bowl at its bottom, and the starting well connects with the idling well through a drilled hole near the top, just below the level of fuel in the carbureter bowl. When the engine is at rest, fuel fills the idling well and overflows through the connecting hole, filling the starting well. Into each of the wells dips a tube, extending from the bottom thereof to a common passage which connects through a small drilled hole to the interior of the carbureter barrel at the edge of the butterfly throttle valve. With the throttle valve opened very slightly a very strong suction exists when the engine is cranked over, and this draws a sufficient amount of fuel into the cylinders for easy starting, the fuel being finely atomized.

As soon as the engine starts, the level of the fuel in the idling well drops to a point below the hole connecting the two wells. The fuel in the starting well having been exhausted by the start, this well is then empty, and through the tube dipping into it is drawn air which, being measured past the idling adjusting valve, mixes with the fuel from the idling well and provides the proper mixture for idling the engine. When the engine is again stopped the fuel rises in the idling well, overflows into the starting well and thus provides automatic ally for the next start.

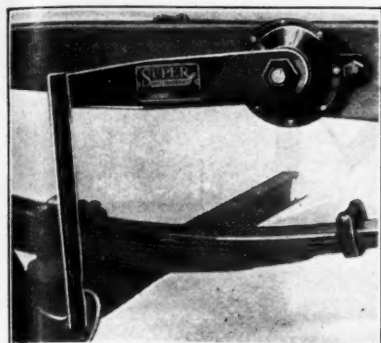
### The Super Shock Absorber Is of Friction Cone Type



*Sectional view of Super shock absorber*

**A** SHOCK absorber of the friction cone type has been placed on the market by the Super Shock Absorber Co., Inc. It is claimed that this unit requires no attention once it has been installed on a car. The device has a housing comprising two pressed steel members which are secured together by riveting. One of them is cup-shaped and serves as one member of the friction device. This part of the housing is spot-welded to a steel punching by which the absorber is secured to the frame of the car. A stud with a hexagonal center portion extends through the housing. It is supported in a bronze bearing in the cover of the housing and on the hexagonal portion sup-





*Super shock absorber*

ports the movable friction member, which also is cone shaped.

Between the two friction surfaces is located a ring of red fiber. The friction members are pressed together by a steel spring of volute form, which bears against a fiber washer at its small end. When in the free state this spring is more than twice as long as when compressed in the housing, and any slight extension due to wear of the fiber liner and fiber washer will not alter its pressure perceptibly. An arm of flat steel is secured to the stud, and the free end of this arm connects with the axle through a ball-jointed link in the usual way.

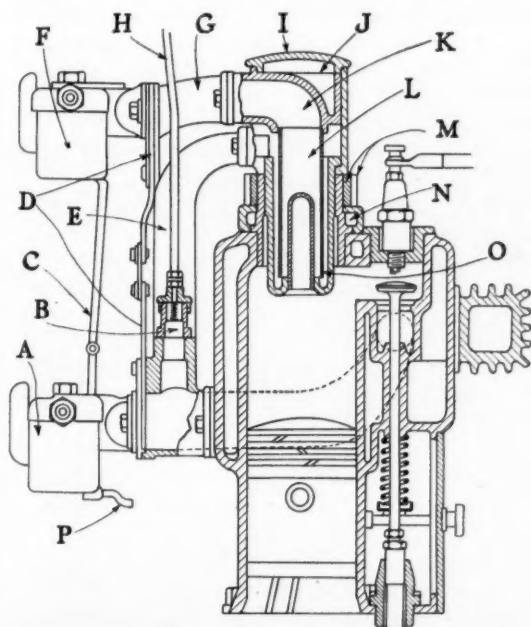
The housing is filled with non-fluid oil, which insures lubrication of the single bearing of the device and is claimed to practically eliminate wear on the friction surfaces.

A shock absorber of this type naturally checks spring action in both directions equally.

## Vaporizing System for Heavy Fuels Developed by Fiat

**I**N practically all European countries there is a tendency to go to the use of heavy oils such as kerosene and gas oil for the operation of motor trucks. The Fiat company has developed a vaporizing system for heavy fuels which is known as the Naftoil. A sectional view of the apparatus is shown herewith.

Evidently the engine must be specially designed in order that the vaporizer may be fitted to it. Two car-



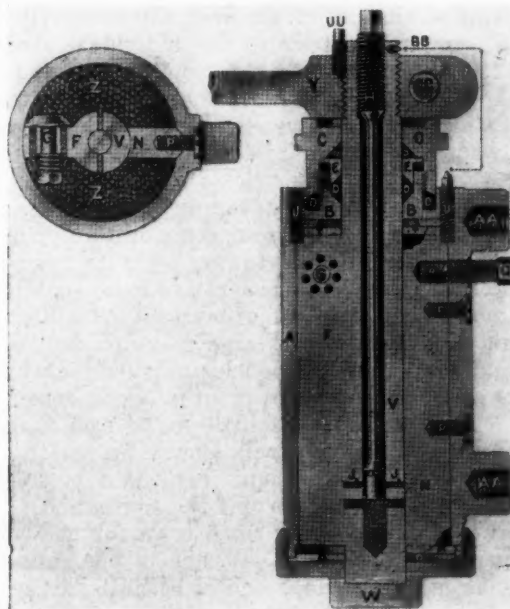
*Sectional view of Naftoil vaporizer for operating motor trucks on heavy oil*

bureters are used, the upper one serving for the heavy oil, and the lower one for feeding gasoline. The mixture from the heavy fuel carbureter passes into the vaporizer located at the center of the cylinder head and then into the regular inlet manifold. The two carbureters may be shut off from the engine alternately by means of registering valves, which are linked together in such a way that when one opens the other closes. It is claimed that with this apparatus the fuel consumption on the test stand is at the rate of 0.9 to 0.95 lb. p. hp.-h.

Referring to the illustration, A is the gasoline carbureter; B, the supplementary air valve; C, the link connecting the shut-off valves of the two carbureters; D, shut-off valve; E, collector tube; F, heavy oil carbureter; G, inlet pipe; H, Bowden wire; I, plug holding in place the ell J; K, demountable conduit; L, vaporizer; M, washer and counter-washer; N, water jacket; O, seat of the vaporizer; P, accelerator lever.

## New Flentje Shock Absorber Has Piston with Rocking Motion

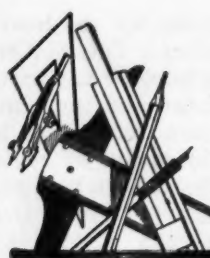
**E**RNST FLENTJE, who heretofore has been manufacturing shock absorbers of the hydraulic cylinder and piston type, has put on the market a new design embodying the same general principle but making use of a piston having a rocking instead of a rectilinear motion. The cylinder is made of gun barrel steel, and the space within it is divided into two chambers by the rocking piston. Both chambers are filled with glycerine. The glycerine



can pass from one to the other either through a small adjustable port at the axis of the rocking piston or through a check valve mounted in the piston.

When the spring compresses, the glycerine passes through the check valve, which is opened by the pressure of the liquid, whereas when the spring rebounds the check valve closes and the fluid can pass only through the small adjustable port, so that a considerable resistance is interposed to the rebound.

The cylinder is mounted directly on the frame and an arm secured to the shaft of the rocking piston connects by a link to the axle. The range of motion of the forward absorber is 8 in. and that of the rear 12 in. A feature of shock absorbers of this type is that the force of retardation adjusts itself automatically to the blow.



# The FORUM



## Interest in Welfare of Dealer Essential to Future Progress

*Middle-western distributor gives his frank views of present situation in retail field. Educational work by manufacturers needed. Bidding for used cars forced by pressure from makers.*

Editor, AUTOMOTIVE INDUSTRIES:

**Q**UOTING from one of our truly great automobile manufacturers, "The time of the survival of the fittest is here." Each succeeding year bears out this statement more strongly than ever, and though much can be said regarding financial stability and standardization of products as contributing directly or indirectly to the manufacturers' chances of survival, the underlying factor that will ultimately determine the individual strength of manufacturers is their disposition to build for permanency. This holds true not alone in the stabilization of their own organizations but in the conservation of their dealers, who in reality represent the bulwark of their existence.

Statisticians tell us that over 60 per cent of all cars manufactured are sold in rural communities through the medium of dealers in small towns, yet with very few exceptions 90 per cent of the dealers are today existing from hand to mouth, with the rate of mortality steadily increasing. This situation is in a large measure due to the indiscriminate and unethical policies pursued both by manufacturers and distributors in creating their dealer organizations. Dealers who have little or no excuse for their existence are awarded contracts simply by reason of some salesman's eagerness to secure immediate business with no thought of the permanency of the connection.

The average dealer in the small town for many reasons is unprepared to operate successfully a business as complex as automobile selling, and a critical survey of the country dealers tends to show that the vast majority lack the essential qualifications to properly conduct an agency. True, some of the larger manufacturers have attempted through the medium of sales manuals to instruct dealers in efficient methods of operation. They have laid too much stress on selling, however, in all probability because their tremendous production necessitated increased effort on the part of dealers to secure a greater volume of sales. Little or no effort has been made to assist the dealer to increase his earning capacity through scientific management except perhaps in a general way. No concrete rules have been laid down for his edification.

There is a pressing necessity for concentrated effort on the part of both manufacturers and distributors to educate the small dealer in the fundamental principles of management and proper control of his affairs if the integrity of

the industry is to be preserved. As it stands today the situation is simply this:

Dealers do not command the confidence of bankers and are treated with contempt by the average citizen. The reason is obvious. Many dealers even boast of the numerous lines of cars they have handled in past years, little realizing that this policy of diversification has been largely the cause of their downfall, whether directly responsible or not.

This has had a demoralizing effect upon the public for the very good reason it receives no definite assurance that the service they were so profusely guaranteed would be forthcoming. As a consequence the automobile dealer is classed with aspiring politicians who promise much but deliver little.

How many small dealers can show a substantial net profit in relation to invested funds? It is a safe conjecture that many of them are unable to tell whether or not they are making any money at all.

In their mad rush for volume, distributors and manufacturers have forced the small dealer to accept and pay for cars under penalty of cancellation, disregarding all principles of good business and without consideration of his working capital or his ability to dispose of the load profitably. Wild trading has been the natural outcome and as a result the public force dealers to bid for their old cars, which go to the highest bidder.

Substantial growth and stability cannot come out of this deplorable condition unless manufacturers and distributors organize to stop this practice, which is tearing down the very foundation of the industry. It cannot be ignored much longer and intelligent steps must be taken to reestablish the dealers on a higher plane so that they may take their rightful place among other business men in their respective communities and command the respect they once enjoyed.

Not until some tangible method is adopted to assist dealers materially to build up their organizations and earn substantial profits can outside capital be attracted and new blood infused into the business.

If permanency is a factor in the future success of the industry and the present dealer organization all we have to rely upon, then let us build up that organization wisely and judiciously so that in course of time other types of business men with capital who are so sorely needed in the



business at present will naturally be attracted to it by its money-making possibilities. At present they are afraid to venture into the automobile business on account of the bad precedent already set. From the outsider's point of view, the "game," as they call it, is a gamble and a losing proposition in every respect.

Consideration, cooperation and a genuine interest in the dealer's welfare is the only solution to the problem manufacturers and distributors must inevitably face.

HORACE J. SMITH,  
Vice-President, Southwest Nash Co.

## Selling Direct to Users

Editor, AUTOMOTIVE INDUSTRIES:

Being at this time the only truck manufacturers producing any great quantity who have adopted the policy of selling direct to user, we cannot help taking notice of a statement made by Don F. Whitaker at a meeting of the Motor Truck Association at Detroit, which appeared in your issue of Nov. 1.

We have been manufacturing motor trucks since early in the year of 1909 and are one of a very few truck factories in existence in the United States with so long an experience.

We have never at any time in our history needed capital to operate our business that has not been promptly forthcoming. We have never ceased operations for one day, excepting usual holidays. We have never had our credit questioned by an individual or by individuals at any period of our operations. We have never at any time considered the advisability of liquidating and discontinuing the manufacture of motor trucks.

The above facts should entitle our judgment to at least a little weight, and our decision to market our product direct to users within a certain radius of our factory was made after months of consideration and consultation. We believe in this method and will back it with all our resources and fighting strength, and this notice is a warning to other truck manufacturers that they are only postponing a similar action.

R. C. STEWART,  
President, United States Motor Truck Co.

## Production Problems Outlined

Editor, AUTOMOTIVE INDUSTRIES:

From what I have observed in several plants, there does not exist today good, practical cooperation between the engineering and production departments. The engineer, being so busy with his own affairs, gets out into the works only occasionally, with the consequence that many times his recommendations are impractical and the designs which he succeeds in selling the management frequently have to be modified in the midst of trouble occurring in early production.

I contend that it is more necessary for the engineer to be also a good production man than it is for the production man to be an engineer. Ever since the World War there is a better feeling existing between factory executives of competing plants, due to the fact that the Government actually requested a general interchange of views or a swapping of production experiences to bring the various plants into immediate production and to quickly clear away difficulties during the war period.

I would suggest that the various plants adopt a policy that they have no production secrets to hide from each other and that the engineers visit each other's plants

frequently. I do this repeatedly, and, of course, invite reciprocation. It does not make a particle of difference what the production problem is, the other fellow invariably has a different slant on it than have your men.

Out here in Detroit, in the heart of the industry, we have made up our minds that the engineers must know more about production problems; consequently, in the Detroit Section of the Society of Automotive Engineers we have actually started this year to alternate production and engineering meetings, adopting a novel course of holding meetings every two weeks.

In my estimation the most important production problems today are the production of quiet gears, smooth-running motors, staunch, simple bodies, and more durable and quickly applied body finishes.

The most troublesome points in the manufacturing organization are:

1. The foundry producing both the ferrous and non-ferrous castings.
2. The inspection department, which must be handled by a real diplomat. A man of great versatility and of the broadest experience is necessary to run this department.
3. When troubles are found to exist in the factory the department concerned must be shut down immediately and not another piece of defective material allowed to leave it, and it should not make a particle of difference how great the pressure might be from the production manager or the sales department. The individual responsible for the trouble should be brought forward and severely reprimanded and if possible be punished by demotion or discharge. This work must be handled with military discipline.

THOMAS J. LITTLE, JR., Chief Engineer,  
Ford Motor Company, Lincoln Division.

## Honey as Non-Freeze Solution

Editor, AUTOMOTIVE INDUSTRIES:

The very common alcohol anti-freezing solution has two disadvantages which, if possible, it would be desirable to overcome. These are its low boiling point and its rapid evaporation, making the freezing point of this solution in practice a somewhat uncertain quantity requiring frequent test.

A honey-water solution gives evidence of overcoming these disadvantages. The boiling point of a fifty-fifty solution is slightly above that of water, and when this mixture boils only the water is given off, so that once the radiator is filled all that it is necessary to add thereafter, provided there is no leak, is water.

Preliminary tests of the honey-water solutions have been made at the New York State College of Agriculture and indicate the following:

The proposed mixture is one part extracted honey to one part of water, by volume.

Extracted honey weighs three pounds to the quart.

The mixture should be boiled in an open vessel to bring all froth and scum to the top, thus cleansing the solution.

A space of one inch should be allowed above the solution in the radiator to allow for expansion.

All gaskets must be tight.

If the solution gets low, add water while the car is in use.

At the freezing temperature, 1.4 deg. Fahr., this fifty-fifty honey-water solution flows freely while a soft, mushy ice is forming. Below this temperature the mushy ice thickens so that it will not flow by gravity, although it can be stirred. This mixture expands with heat and contracts with cold. It may be subjected to any temperature

below zero without bursting the water jacket. It will not even burst the thinnest glass test tube.

This solution has been used in various parts of the United States for several years. The results of our experiments and the reports of the use of this solution in automobiles show that it is a practical anti-freezing solution and worthy of further investigation.

R. B. WILSON,  
F. L. FAIRBANKS,

Rural Engineering Department, N. Y. State  
College of Agriculture, Cornell University.

## Front End Drives

Editor, AUTOMOTIVE INDUSTRIES:

Lately there has been considerable discussion regarding the value of ground gears for the front end drive of automobile engines, as a means of helping to solve the puzzling problem of quietness at this point. Some of the discussions lead to the belief that some phases of the front end drive problem are not clearly understood.

In the first place, the writer wishes to make it clear that he holds the belief that grinding does make a more perfect and probably as a general rule a quieter gear. On the other hand, the nature of the front end drive and the peculiarities of the entire engine are such that it is sometimes possible with even microscopically perfect gears to still have a noisy front end.

Were the gear teeth the only factor to be considered, there is no doubt but that extreme accuracy in their form and finish would result in quietness. Shaft diameters vary, however, and so do the center distances between the shafts. Even if the crankcase is absolutely accurate when it leaves the jigs and fixtures in the shop and finds its way into the assembled car, and granting that in assembling the tension on the various bolts and cap screws did not distort the case, the case often will distort to some extent after the first running of the engine. If this distortion occurs it may be sufficient to upset all the calculations of the designer and set at naught much of the accuracy of the gear maker.

A desirable quality in front end drives is elasticity. This prevents noises which originate in other parts of the engine from resounding at the front end. The alternating torsional stresses on the crankshaft resulting in variable angular velocity and high momentary forces are sufficient to set up a pounding action which is much relieved through the employment of an elastic driving medium.

The importance of low unit pressures, with large areas protected by an accumulative thickness of oil films, in themselves of silent and elastic nature, as provided in chain drive, gives something of a hydraulic effect which is very noticeable in deadening the shocks due to the high alternating torsional stresses on the crankshaft and camshaft.

Experiments often have shown that, where unfavorable conditions exist even in other parts of the engine, a perfect gear may be noisier than one which is imperfect through its more effective transmission of vibration. This phenomenon has been cited by gear grinders themselves in recent discussions.

A mistake often made is to expect gears to become quiet in service. Gear drives on the front end of an engine will not "run themselves in," as even engineers of considerable experience have thought. Were it not for the fact that the ratio is exactly 2 to 1, requiring the same teeth always to come in contact, it would be different. The teeth then would be apt to wear down to an angle, and would, as time went on, become more quiet, until the wear proceeded too far, when they would become noisy again.

With the same two teeth always coming in mesh, however, the tooth-to-tooth error which is a great cause of noise, where the noise is due to the gears themselves, becomes even more pronounced as time goes on and the gears become more instead of less noisy. In this respect grinding is a benefit because when the gears are finished by grinding the resulting drive is generally at its best just after manufacture. There is then no such thing as waiting to "run the gears in," which may never occur. The gears must mesh properly right at the start.

The problem of producing a silent front would be simpler if it were possible to produce engines in which the torsional load on the camshaft is constant and does not fluctuate with the distance of each opening valve from the timing gear drive; or to produce engines in which the explosion in the No. 1 cylinder, for instance, did not twist the entire crankshaft against the flywheel inertia, resulting in a recoil of unbelievable violence.

FRANK OAKES,

Superintendent of Manufacture, Link-Belt Co.

## Fuel Consumption Conversion Formula

Editor, AUTOMOTIVE INDUSTRIES:

In converting the French and German mileage figures to American units I have found the figure 235.2 to be of assistance. That is to say, 23.6 miles per gallon of gasoline corresponds to 10 lt. per 100 km., and 11.8 miles per gallon corresponds to 20 lt. per 100 km.

It follows that if you divide 235.2 by the miles per gallon you get liters per 100 km., and, the other way round, if you divide 235.2 by the liters per 100 km. you get miles per gallon. I do not know whether this figure is generally known, but I find it useful.

S. M. UDALE,

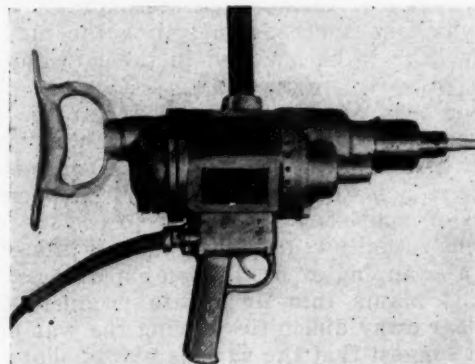
Holley Carburetor Co.

## Electric Screw Driver

### Adapted to Production Work

IN quality production, power methods of driving home wood screws, machine screws and nuts are largely used, because of their rapidity and consequent economy. The Black & Decker Co. announces a No. 3 portable electric screw driver and socket wrench for heavy duty production work. This machine, which weighs only 15 lb., was designed to drive home very large wood screws and lag screws and for running up nuts on large bolts.

The spindle is equipped with a positive clutch which automatically disengages when the forward pressure on the tool is released. The Black & Decker patented pistol grip and trigger switch is used on this tool. A universal motor furnishes the power, and can be supplied suitable for all standard voltages.



Black & Decker No. 3 screw driver and socket wrench



## Front Axles Are Drilled and Reamed in Turn-Over Jig

*New method saves time. Two radial heads added to gang drill. These units are jointed so that they can swing into position without interfering with main spindles. Output is increased.*

**F**OUR-SPINDLE, geared gang drills, as made by the Barnes Drill Co., have been used for drilling and reaming automobile front axles for many years, but some time ago a user of these drills conceived the happy idea of a turn-over jig, the use of which saves the time ordinarily required for reaming and reloading.

This was accomplished by adding two radial heads to the gang drill, which heads are of jointed construction, so that they can swing into the reaming position without interfering with the main spindles which drill the pivot pin holes. Thus, while one axle is being drilled under the main spindles, using auxiliary heads for the spring pad holes, the pivot pin holes are reamed in the outer or upside-down position of the turn-over jig, the drill bushing thus being out of the way of the reamer.

### Handling Methods

The finished axle is then removed and a new forging chucked in the jig, the reaming and reloading being accomplished while the drilling operation is performed in the opposite position.

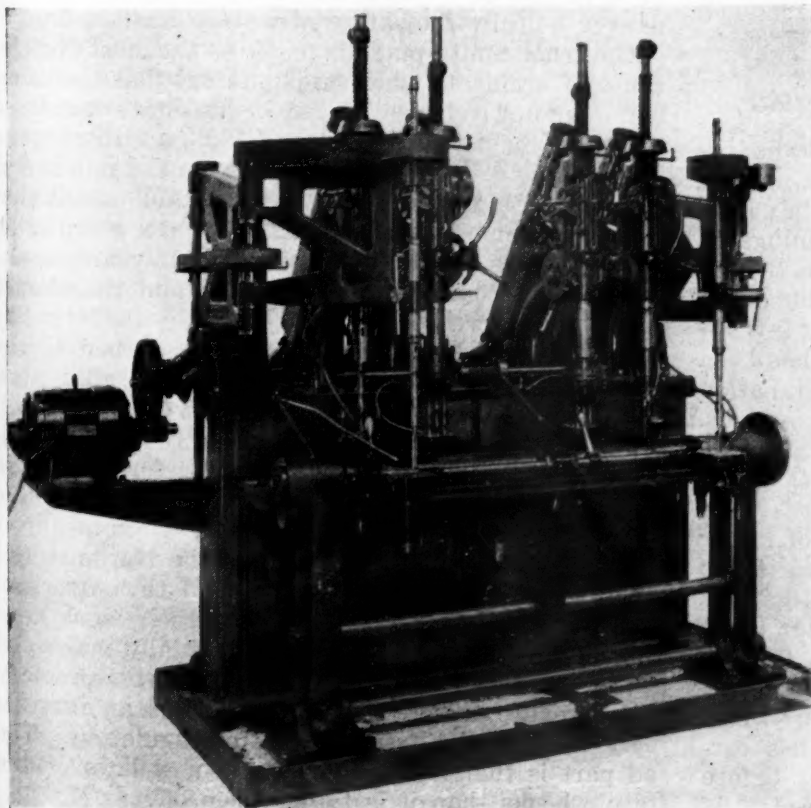
The air cylinder at the base of the machine, which is actuated by a pedal, pushes the jig to the outer position,

so it will clear the table when turned over. The air cylinder then draws the jig back to the working position. One of the illustrations shows an end view with the jig in the turning position. It takes less than 10 sec. to index the jig.

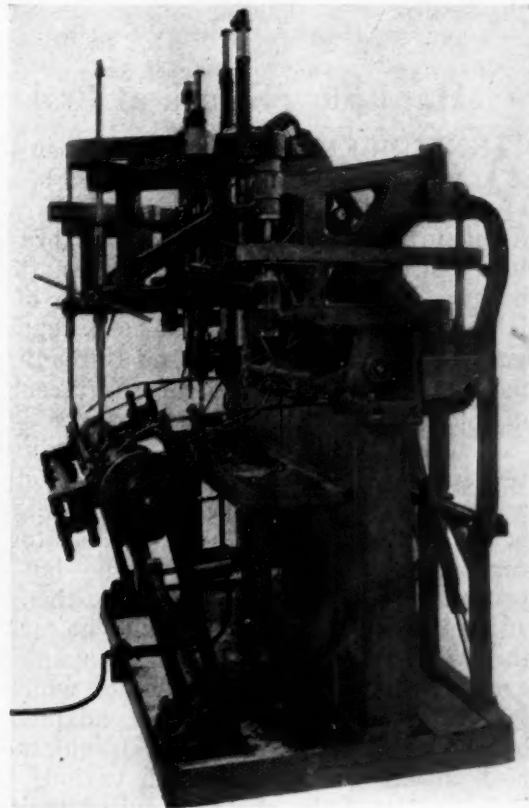
### Lateral Adjustment Provided

The jig has quick lateral adjustment to bring the bushing guides to the center of the base of the axle forging, which varies slightly, owing to variations in shrinkage of the forging. Likewise, the outer spindles of the 24-in. gang drill are quickly brought to the center of the base of the axle forging, which varies slightly owing to variations in shrinkage of the forging. Likewise, the outer spindles of the 24-in. gang drill are quickly brought to the center of the bushing by a simple movement of one lever, located at the center of the gang, directly in front of the operator.

We understand that the introduction of these high production, all-gearred units enabled the manufacturer to double his output of front axles, as compared with his former methods, as the reaming and reloading time is entirely eliminated.



Barnes front axle drilling and reaming machine



End view of front axle drilling machine, showing turn-over jig in outer position ready to turn over

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### Subscription Rates

United States, Mexico and U. S. Possessions.....\$3.00 per year  
Canada ..... 5.00 per year  
All Other Countries in Postal Union..... 6.00 per year  
Single Copies ..... 35 cents

Entered as second-class matter January 2, 1903, at the post-office at New York, New York, under the act of March 3, 1879.

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Automotive Industries—The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903, and the Automobile Magazine (monthly), July, 1907.

### THE CLASS JOURNAL COMPANY

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## Hard Blow Struck at Brake Tests

**A**NNOUNCEMENT that the Bureau of Standards will be compelled to abandon, because of lack of funds, the exceedingly valuable work it has been doing in the testing of brakes and brake linings, is likely to cause considerable consternation in the industry. So far as the manufacture of automobiles is concerned this is one of the most important investigations ever instituted by the Bureau. It has been peculiarly timely because of the recent installation of four-wheel brakes of various types on many lines.

It has been the contention in certain official quarters in Washington that some of the activities of the automotive section of the Bureau of Standards were being duplicated in the private laboratories of motor car producers. That may be true, but there is one profound difference. The results of the investigations of the Bureau are available to all who seek them, while the work done by individual companies is for the exclusive benefit of the corporation which pays for it.

Every company which has adapted four-wheel brakes as standard or optional equipment has carried on exhaustive tests with various types before it has selected the one best suited to its needs. If the results of all these tests could be collated and made available for the entire industry, the data would

be more complete than any which the Bureau of Standards could assemble, but no such compilation can be expected.

Men in the automotive industry, like all other business men, long have been demanding economy in governmental affairs, but they don't want economy to run into penury in the practical business bureaus at Washington. The Bureau of Standards is one of the most important of these and it has deserved better things. The budget of the Department of Commerce, of which it is a part, is none too large for the coming year, but the industry will be sorely disappointed if it is not found possible to transfer from other uses sufficient funds to permit a continuation of such a valuable survey as that relating to the effectiveness of various braking systems.

## Congestion Real Accident Cause

**G**OVERNOR SMITH of New York has sent to the Legislature a special message urging the enactment of measures designed to promote safety by the more rigid regulation of motorists. The most important step he recommends is the State-wide licensing of drivers. Licenses now are required only in New York City. His purpose is highly commendable, but the remedy he proposes is of doubtful value.

Licensing does not prevent carelessness, and the most reckless drivers are usually among the most proficient. The percentage of accidents which will be prevented by licensing will be virtually negligible. Even the possibility of license revocation holds little terror for the dangerous speed maniac. He will continue to drive whether he has a license or not, unless he is in jail, and that is the place for those who endanger wilfully the safety of pedestrians.

Governor Smith puts his finger on the most fruitful cause of accidents when he points out that the number of motor vehicles in use in his State increased 810 per cent between 1913 and 1923, and that there has been no corresponding increase in the mileage of streets and highways, with the inevitable result that "if we continue to add 250,000 more to a given mileage of streets and highways year after year congestion must become more pronounced and the chance of accident increased."

This is a condition which cannot be curbed by the licensing of motorists. It is common to all States, and the legislative season which is now beginning will bring a flood of measures intended to reduce the accident hazard. It is unfortunate, therefore, that the automotive interests of the country have no really constructive measures to propose.

The traffic safety committees of the National Automobile Chamber of Commerce and the American Automobile Association have begun their work none too soon. Until the persons who actually make and use motor vehicles are able to propose some remedy which really will cure, they can expect an increasingly onerous and futile burden of regulation. The sad part is that it is easier to get new laws on the statute books than it is to get them off.

The need for a uniform motor vehicle law which will embrace all States becomes more apparent every



day, and it is high time that everyone interested in highways and motor vehicles agreed upon some simple but effective measure. There are no insuperable obstacles in the way.

## Profits Essential for Success

**E**XCEPT for motor car manufacturers who have been blessed with sales volume which has permitted quantity production, with its attendant economies, all branches of the industry have been suffering from a paucity of profits. The question of greater earnings, therefore, is one of first importance, for no commercial enterprise, no matter how favorably its products may have been received by buyers, can exist permanently unless it returns a fair margin of profit.

The ability of a business to show reasonable earning capacity is the last and final test of its success. No concern in any industry can be so independent of contemporary business that it can ignore competition. For that reason it was a timely point which was stressed by C. A. Musselman, general manager of the Class Journal and Chilton Companies, in a statement prepared by him to be read at the annual luncheon given by the Chilton Co. to the manufacturing executives of the industry in connection with the New York show for the presentation of statistics showing the present status of the industry.

"In the automobile business," Mr. Musselman said, "the misfortune or faulty plans of some companies can, and do, reflect on the success of those which are well and efficiently managed. Therefore, the individual manufacturer cannot afford to stand alone. It is to his interest to see that the business as a whole is conducted on a sound basis and that evils do not creep in that ultimately may destroy the structure of America's greatest industry.

"Remember that in the public eye the industry is measured by its failures as well as by its successes, and the public is not always discriminating in its judgment. The pathway blazed by the leaders in the industry must be the right one and the secondary interests in the industry must be forced to transact business on a sound economic basis, and one which will establish for the automobile industry the highest standard of business procedure ever laid out for any great industry.

"The history of the automobile business has been one of continuous success. We have experienced so little of adversity that we are reaching the state of mind where anything which does not savor of blind optimism is not entirely acceptable. \* \* \* but the future of our industry will not be founded on self-congratulation."

To forestall any misunderstanding of cautionary signals, Mr. Musselman added that he always had believed in the potentialities of the automobile business and that he saw no reason whatever why well managed concerns should fear the future.

"The only reservation that I wish to make," he said, "is that as our business becomes more complex we must more carefully and more skillfully weigh the problems which come before us. The future of the industry, be it good or bad, rests with this group of

men. For that reason I feel that we need to give serious thought to the fundamentals of our business relationships in order that we, as trustees, may not in the future be accused of holding our great trust lightly."

Unless optimism is tempered with sanity it will lead into the paths of folly. The most difficult problems which confront the industry today relate to the distribution of its products. None of its past precedents will fit the conditions of the present. Sound economic and business principles which have been developed in other and older lines are the only guide posts.

The most outstanding of these principles is that if success is to be assured there always must be a fair margin of profit.

## Value of Trucks Established

**T**HE value of motor trucks in relieving railway terminal congestion seems to be disputed no longer. At the transportation conference held in Washington last week, railway executives failed to raise any protest to the report of the Swayne committee, which embodied a very definite statement along this line. Those railroad men who did speak on the subject indorsed heartily the conclusions reached by the committee and seemed eager to foster ways and means of utilizing the truck more fully.

Difference of opinion did arise, however, as to the best method of working out this supplementary service. Railway executives are practically a unit in opposing truck operation by the rail carriers. They feel that hauling requires expert knowledge, which they lack. They say that they understand the railroad business and want to stick to what they know how to do. They believe that the trucks should be operated by a separate trucking company, working in close harmony with the railroads, possibly under contract with the roads.

Some transportation men, however, believe that the most efficient coordination can be obtained only if the truck lines are directly controlled by the rail carriers. This system has worked out successfully in England, they point out, and facilitates operation very materially.

The weight of opinion in this country seems to lie heavily on the side of independent trucking companies at the present time. One man, who has studied the situation carefully both here and abroad, believes that railroad operated truck lines would be the most efficient, but says emphatically that it would be a mistake to try to force the railroads into the motor haulage business if they are unwilling to undertake truck operation on their own initiative. Such action would be certain to result in failure of the motor lines. This seems to be the opinion of many of those who have studied the problem carefully.

There has been some talk of a national organization to handle truck lines in connection with rail terminals throughout the country, but most transport experts are inclined to believe that local companies provide a better means of getting real action within a reasonable length of time.

# Excise Tax Repeal Hearings Begin

## Hanch and Chalfant Present Arguments

### No Suggestion Made to House Committee That Entire Levy Be Removed

WASHINGTON, Jan. 15—The fight for the repeal of the excise automobile taxes was taken up yesterday simultaneously in the House and Senate. In the upper body Senator Walter E. Edge (Rep.) of New Jersey introduced three separate bills for the repeal of the excise taxes, similar to the three bills introduced in the House by Congressman Robert H. Clancy. In the House the Ways and Means Committee began its hearings on the taxation revision.

The first organization to be heard by the Committee were representatives of the National Automobile Chamber of Commerce, which urged that the users of the 15,000,000 automobiles be given relief in the form of reductions of their excise taxes.

### Repair Parts Tax Stressed

Emphasizing the fact that the tax on repair parts is a "tax on misfortune," which he declared "has no parallel in the tax statutes of the country," C. C. Hanch, vice-president of the N. A. C. C., who acted as spokesman, pointed to the wide use of the motor car and stamped these taxes as oppressive measures which react directly upon the 4,500,000 farmers who today own cars, as well as upon the vast army of factory workers, business men and others who have found the car essential to their business.

In presenting the argument, no attempt was made to urge that the total automobile excise tax, amounting to \$144,000,000 annually, should be lifted at this time. It was urged, however, that Congress should give each branch of the industry discriminated against some measure of relief through proportionate distribution of such cuts as may be made.

Stress was laid particularly upon the "misfortune tax" now extracted by the Federal Government. In presenting this phase of his argument, Mr. Hanch told the committee:

The tax on repair parts is now classed as a luxury. How this is so, is beyond comprehension. We have come to regard the tax on repairs and repair parts as a "misfortune tax;" and I can see no other definition that thoroughly fits it.

It certainly is sufficient penalty for the

(Continued on page 152)

## Business in Brief

NEW YORK, Jan. 14—Cold weather in certain parts of the country is credited with stimulating retail business appreciably, although in many lines there is a noticeable quiet following the holiday season. Industry is looking ahead to spring trade, and there is considerable activity in preparation for this anticipated rush on the part of buyers. Added to the cold weather stimulant to trade, there has been a lowering of prices to help move winter goods that had its effects upon the market.

Favored by the mild weather, the building trade has finished up a big year and looks forward to an even better twelve months. In steel prices are firm and higher, and buying has picked up. One big concern reports a substantial gain in unfilled orders, this being the first time since last March that any gain has been made. Copper is the only metal which has not reported any advances.

Low temperatures have affected the crops in the South, especially vegetables, while Texas has benefited by rains which promise to be helpful to winter-sown crops. Winter wheat was in good condition up to the cold wave.

In textiles trade in the primary markets continues light in volume, but in finished cottons business seems to be picking up.

Car loadings, which totaled 615,431 for the week ending Dec. 29, show a decrease of 261,826 from the preceding week. Car loadings for the fifty-two weeks of last year total 49,814,962, against 43,324,593 in 1922.

## Clark-Turner Piston Co. Continues Despite Fire

LOS ANGELES, Jan. 15—Fire partially destroyed the plant of the Clark-Turner Piston Co. of this city, manufacturer of the De Luxe lightweight cast-iron piston.

President Stanley S. Turner states that while there will be some slight delay in production on a few of the special oversize numbers in the De Luxe line, deliveries on future orders for stock numbers will be taken care of rapidly.

All core boxes and patterns were stored in a fireproof vault so that production starts without delay.

## Schedules Increased as Outcome of Show

### Further Step-up in Production Toward Capacity Operations Due in February

NEW YORK, Jan. 14—Automobile manufacturers will move production forward this month, based on returns from the New York show, when convincing evidence was given of sustained buying interest on the part of the public. Despite the fact that a New York automobile show, for the first time, was held miles from the center of the city, figures indicate that attendance records at previous shows were broken this year.

The caliber of the crowds was one of the most promising features of the attendance, ready response being made to the refinements in models, the fact that cars are better than ever before, and the introduction of innovations in mechanical design.

### Look for Good Half Year

With an increase in production schedules this month, a further stepping up will occur in February until all plant facilities are utilized. Manufacturers look for high programs in production to continue for the first half of the year at least, forming their estimates on the public attitude.

The full strength of the buying movement will not be felt until the beginning of spring, but producers feel warranted in operating on a high level to meet the demand at that time. Shipments are being made to dealers in greater volume than in the same period last year, and the part that cannot be absorbed through current sales will be stocked against spring call.

There is also a disposition on the part of manufacturers to warehouse stocks not only at factory centers but at distributing points where they can be forwarded without delay when sales demand warrants. Every precaution is being taken by producers toward preventing a shortage of cars in the spring, the heaviest buying period of the year, such as was experienced a year ago. Heavy production now and accumulation of stocks, it is felt, are the two important factors which will act as preventive measures.

(Continued on page 160)



## Baker R. & L. Buys Rubay Co. Property

**Takes Over Body Business—Car  
Interests Will Be Reorgan-  
ized or Sold**

CLEVELAND, Jan. 16—Baker R. & L. Co., automobile body and industrial truck manufacturer of this city, has purchased the land and plant of the Rubay Co., maker of automobile bodies, for a reported price of \$800,000. The combined plants will employ 1500 men.

E. J. Bartlett, vice-president and general manager, states that \$100,000 will be expended this year in building dry kilns for lumber, and that other improvements in the factory will be made to expedite production.

The retirement of Leon Rubay, president of the company, and his return to France several months ago, led to the recommendation of the directors that the sale be made. Yesterday the stockholders ratified the deal.

The Rubay plant, West Seventy-eighth Street and the New York Central Railroad, adjoins, on the west, the vacant land owned by the Baker R. & L. Co., whose No. 2 plant is at West Eightieth Street. After the construction planned is completed the two plants will be one. The fact that considerable progress in increasing production could be made under a single management was a consideration that helped to bring about the decision to combine.

The Rubay Co. turned over important orders for bodies, among them one of 1000 bodies for the Sterling-Knight Co. Mr. Bartlett has announced a new contract with the Peerless Motor Car Co. for the new Peerless six and further orders from the Franklin Automobile Co. Baker R. & L. will continue the manufacture of closed bodies for the Reo and Wills Sainte Claire and probably will build bodies for motor buses.

Under the terms of the sale the Rubay Co. retains the inventory, which will be liquidated while the Rubay car interests either will be reorganized or sold. Paul Lacroix, vice-president in charge of production of the Rubay company, will continue in charge of the plant.

## Bid Made for Weidely; Operating Plans Laid

INDIANAPOLIS, Jan. 16—A bid approximating \$343,000 was made here yesterday at receiver's sale of the assets of the Weidely Motors Co. by an attorney acting for E. W. Showers of Bloomington, Ind., and W. A. Humphrey, treasurer of the Weidely company, majority bondholders. The receiver is W. R. Fletcher, who was appointed on petition of Mr. Humphrey last August, when the company's customers suddenly stopped shipping schedules of Weidely engines.

The bid will be submitted to the court tomorrow, and, if found acceptable, the

## New York Show Has Given the Industry a Flying Start Toward Another Highly Successful Year

AN INTERVIEW WITH JOHN N. WILLYS,  
President of Willys-Overland, Inc.,

by D. M. McDonald,

Detroit News Representative of the Class Journal Co.

New York, Jan. 14.

**I**N quickening public interest in automobiles, John N. Willys, president of Willys-Overland, Inc., pays the New York show of 1924 the compliment of being the greatest and most successful of any that has yet been held.

Any expenditure that has been made on the show by the industry generally and by individual manufacturers has been well spent, he declares, for the interest that has been aroused could not have been engendered in any other way, and it has stimulated the automobile pulse of the entire nation and given the industry a flying start toward another highly successful year.

Mr. Willys confessed to mild opposition to the proposed use of the Armory in the Bronx as the site for the show, but his previous views, he said, he is very cheerful to retract because of the highly successful character of the exhibit. He looks to the Armory as the site of successful automobile shows for many years, and declares that he isn't vitally concerned as to details of weather, as long as the exhibit can be made as attractive as this one was.

New cars and innovations of the year such as four-wheel brakes and balloon tires had an important bearing in bringing about the large attendance at the show, Mr. Willys said, but there will be new features all the time that will be interesting. It is the fact that the industry is constantly improving its product which makes the shows a great popular feature of each succeeding year.

Whether manufacturers with strictly new lines or radically changed models are benefited by shows, to the disadvantage of others, was not to be considered, Mr. Willys said. All manufacturers have the opportunity to make the best display they can and certainly anything that any manufacturer does to make the automobile more interesting to the public, works a benefit to all.

The question of retail sales at a show is not as important as the arousing of public interest. Sales follow shows naturally. This New York show, however, has gone far beyond expectations from a retail sales viewpoint, the reason being probably that there was less of the attendance than formerly that just dropped in to spend a few hours.

Dealer entertainment at the shows cost many producers large sums of money, said Mr. Willys, but it is worth it to welcome the dealers to a friendly meeting and get away for one night from cold-blooded relations that exist through the business year. Friendships and contacts are made that are valuable both to dealers and manufacturers. To Mr. Willys the show dealer meetings are one of the most important features of the week.

National shows should never be looked to for any special activity in the signing of dealers, Mr. Willys says. This work is most successfully done by territorial men throughout the year.

plant very shortly will resume operation. Company officials say that several contracts for engines can be closed at once if the sale is completed. Definite plans have been made to get production started as soon as the bid is accepted, and the manufacture of automobile and tractor engines will be continued.

## All Officers of Hudson Reelected by Directors

DETROIT, Jan. 16—All directors of the Hudson Motor Car Co. were reelected at the annual meeting this week. The directors are R. D. Chapin, R. B. Jackson, H. E. Coffin, W. J. McAneeny, G. G. Behn, O. H. McCornack, J. W. Beaumont, E. E. Staub, A. Barit and S. I. Fegete.

The directors re-elected the following officers: R. D. Chapin, chairman of the board; R. B. Jackson, president and general manager; W. J. McAneeny, vice-president and treasurer; H. E. Coffin, second vice-president; O. H. McCornack, third vice-president, and A. Barit, secretary.

The regular quarterly dividend of 75 cents a share was declared.

## Levene Acquires Daniels Plant; Will Continue Car

PHILADELPHIA, Jan. 15—The Levene Motor Co. of this city has bought at receivers' sale the entire plant of the Daniels Motor Co. of Reading, Pa., for \$90,000, subject to a \$50,000 mortgage. In addition, it has purchased the service rights for \$21,000. Unsecured claims against the Daniels company amount to \$750,000, it is reported.

The Levene company announces it will continue the manufacture of the Daniels car, moving the plant to Philadelphia. The Model D line of eight-cylinder cars will be made.

## A. E. F. WHITE DEAD

DETROIT, Jan. 16—A. E. F. White, one of the organizers of the original Cadillac Motor Car Co., and director until the company was taken over by General Motors, died this week, aged seventy-nine. He was widely known in this city as a financier and banker, and had extensive business interests.

## Steps Taken to Stop Dorris Dissolution

### Suit of Stockholders Asks for Injunction and Appointment of Receiver

ST. LOUIS, Jan. 17—A suit to prevent the dissolution of the Dorris Motor Car Co. has been filed in the Circuit Court by Webster Colburn, former vice-president and general manager of the company, and E. J. Scott, who presented a petition signed by 400 stockholders.

Appointment of a receiver to conserve the assets of the company for the stockholders and creditors is asked in the suit, together with an injunction against the company officials to prevent them from proceeding with the liquidation. The defendants named are Frank C. Thompson, vice-president and member of the board of directors; H. B. Krenning and Parker H. Woods, directors.

The petition sets out that the balance sheet of the company for Oct. 31, 1923, showed the company possessed assets valued at \$831,979, and liabilities, exclusive of the stock, were only \$66,269.

It is charged that Mr. Krenning conceived the idea of liquidating the company, paying off the company's debts and the preferred stockholders and leaving nothing for the holders of common stock.

A committee of the common stock stockholders, it is stated, last November offered Mr. Krenning \$75,000 for his 1000 shares of preferred stock, but the offer was refused, and it is further charged that on Nov. 18, last, Mr. Krenning told the stockholders that, if they would vote for liquidation, he would waive all of his claims except for \$100,000 par value of the preferred stock and \$15,000 accrued dividends.

Officials of the company in charge of the dissolution attach little importance to this move of the common stockholders and say they feel certain the judge will permit them to go through with the original idea of dissolution. However, pending disposition of the case all plans are held in abeyance.

### \$51,000 Winther Funds for Unsecured Creditors

KENOSHA, WIS., Jan. 15—Unsecured creditors of the defunct Winther Motors, Inc., will receive at least a small dividend on their claims as the result of the success of A. B. McCall in securing the dismissal of large claims for Federal taxes against the company.

The Government filed tax liens amounting to more than \$65,000 when the affairs were placed in the hands of a trustee a year ago. The claims have been settled for \$14,000, which leaves about \$51,000 held in reserve on this account to be distributed among unsecured creditors whose claims aggregate \$500,000 or more and who probably would not otherwise have shared in the distribution of dividends.

### 3,091,440 USED CARS WERE SOLD LAST YEAR

ST. LOUIS, Jan. 14—Statistics compiled by the National Automobile Dealers Association show that on Dec. 15, 1923, there were 449,520 used cars in dealers' hands, as compared with 396,400 in 1922.

The average acquisition cost was \$322.21, as against \$353.74, while the total capital investment was \$153,820,000, as compared with \$150,264,800. The average capital investment per dealer was \$3,845.50 as against \$3,506.62, while the average number of cars per dealer in 1923 was 9.91 as against 11.23.

The average selling price of a used car in 1923 was \$308.03, according to the association, and during the year 3,091,440 used cars were sold. In 1922 dealers lost \$123,000,000 handling used cars, the association reports, while in 1923 this was reduced to \$57,347,000.

These figures, however, do not include the cost of reconditioning, overhead, selling commission and advertising expense, so the association believes that the figures quoted are only a part of the actual loss of the dealers.

Stockholders have no prospect of any dividends. Final settlement of the estate is expected to be completed by the middle of February.

### L. H. Gilmer to Produce New Upholstery Fabric

PHILADELPHIA, Jan. 14—L. H. Gilmer Co., manufacturer of belts and brake lining, has entered the upholstery field. The new material, to be known as Taconycloth, is an all-cotton, multiple-ply fabric. Its napless character and the closeness and density of the weave are said to be responsible for the manufacturer's claims for durability, cleanliness, comfort and appearance.

The material is supplied in figured or plain patterns, the figures being of a sort of embossed character produced by a calendering process. It is stated that the materials will sell for a moderate price. Different weights are available for upholstery or head lining. The material will be marketed as car equipment first.

### Ford Produced 2,090,950 Cars and Trucks in 1923

DETROIT, Jan. 14—The 1923 production of cars and trucks by the Ford Motor Co. totaled 2,090,950, an increase of 739,626 over 1922.

In addition the company made 101,898 tractors, while the Lincoln division turned out 7932 Lincolns as compared with 5378 in 1922.

## Mitchell Now to Sell Land and Buildings

### Creditors to Meet on January 28 to Consider Several Propo- sitions Offered

RACINE, WIS., Jan. 14—Creditors of the defunct Mitchell Motors Co., Inc., Racine, Wis., have received notice of a meeting, to be held Monday, Jan. 28, to consider a number of propositions for the purchase of the real estate and buildings. The call was issued by Referee Milton Knobloch at the request of Herbert F. Johnson, trustee, who believes it will be possible to make disposition of the remaining assets and wind up the affairs within a short time.

Practically all of the machinery, equipment, stock, fixtures, etc., has been sold, and arrangements have been made for a source of supply of Mitchell parts guaranteeing owners service for five years. Out of excess parts stock not disposed of otherwise, a considerable number of Mitchell phaetons have been assembled by Mitchell workmen and offered for sale at \$987 by H. J. Weber, in charge of machinery sales for the trustee. Practically all of these cars have been disposed of.

### Hupp Reported Interested

Insistent rumors are in circulation that the Hupp Motor Car Co. of Detroit is interested in the purchase of land and buildings, although some time ago officials at Detroit claimed disinterest. Hupp maintains its main body plant in Racine, which formerly was jointly owned by Hupp and Mitchell and is known as the H. & M. Body Corp.

The Ajax Rubber Co.'s western production center at Racine also is said to be contemplating bidding for at least several buildings, and the Modine Manufacturing Co., Racine, radiators and cooling systems, for others. Wallace Ingalls, Racine attorney, representing Chicago interests, is said to have deposited a sealed bid for \$300,000 for the land and buildings.

The report of the appraisers placed a valuation of \$900,000 on real estate and improvements bare of any equipment.

### New Beacon Tire Company Headed by Fred Warner

BEACON, N. Y., Jan. 14—Fred W. Warner, formerly president of the Oakland Motor Car Co. and a General Motors vice-president, heads the Beacon Tire & Rubber Corp. of Beacon, N. Y., which has purchased from the receivers plant, property and good will of the Beacon Tire Co.

W. B. McCallum is vice-president and A. A. Archbold secretary. D. H. Crowley and E. C. Griffith are directors. The new company will manufacture Beacon Toron-treated cord tires, which will be equipped with the Dimpled pneumatic compression leak-proof tubes, which also are being manufactured by the company.



## English Dunlop Made Big Profits in 1923

Steady Progress Shown Since  
Reconstruction of Board  
Two Years Ago

LONDON, Jan. 7 (by mail)—A memorandum has been issued by four directors of the reconstituted board and Sir Eric C. Geddes, chairman of the Dunlop Rubber Co., relating to the report of the committee of investigation which was appointed by the stockholders, in October, 1922.

The committee inquired into the circumstances in which a trading loss of £8,320,006 was shown in the accounts for the year ending Aug. 31, 1921, and into those concerned with the issue of 3,000,000 £1 shares made in 1920 at a premium of ten shillings per share.

### Writs Have Been Issued

The report was delivered to the board of directors in September last; after considering it the company has issued writs against the president, Sir Arthur du Cros, and some of the past and present directors.

The company has also issued a writ against the president and one other director in respect to transactions in which these two were individually concerned, and has challenged the validity of the service agreement under which the president has been drawing a salary of £12,000 a year.

Counter action in respect to this agreement has been commenced by the president, and his two brothers, who are also officials of the company, have taken a similar course in regard to their agreements.

Meanwhile, for the information of a meeting of shareholders to be held this month, a statement is published showing the progress made by the company since the board of directors was reconstituted and assumed control early in 1922. This shows that, following the loss of more than £8,000,000 in 1921, a profit of £588,267 was made in the ten months ending June 30, 1922.

### Progress Has Been Gratifying

Since then, the statement says, progress has been continuous and most gratifying, and as far as can be estimated, at present the profit for the eighteen months ending Dec. 31, 1923, was in excess of £1,250,000. Despite keen competition, sales have reached a record level and production costs have decreased "enormously" and are still decreasing.

The subsidiary companies, including the plantation company and the French and American concerns, are said to be making satisfactory progress, the German subsidiary alone failing to operate successfully owing to disturbed political conditions.

Further developments of the situation are not expected for some months, for unless the shareholders at their meeting insist upon the inspectors' report being



### New M. A. M. A. President

G. Brewer Griffin, the new president of the Motor and Accessory Manufacturers Association, is manager of the automotive equipment department of the Westinghouse Electric & Mfg. Co., of Springfield, Mass., a department he organized at East Pittsburgh, Pa., in 1912. Mr. Griffin entered Westinghouse service as a salesman in 1900. Since then he has been prominent in organization work, having been instrumental in bringing to life the Fan Manufacturers Association, the Arc Lamp Manufacturing Association and the Automotive Electric Association, of which he was president for four years. Mr. Griffin was secretary and assistant treasurer of the Motor and Accessory Manufacturers Association for a number of years before becoming president.

published, the unspecified charges made against most of the directors are not likely to mature until the proceedings instituted reach the courts.

The present capital of the English Dunlop Company is approximately £20,000,000, plus £3,000,000 8 per cent mortgage stock.

### G. M. Dickson Leaves National Motors Corp.

INDIANAPOLIS, Jan. 12—George M. Dickson, vice-president of the National Motors Corp., resigned from the organization this week. He continues as president of the old National Motor Car & Vehicle Corp., whose assets were bought by the National Motors merger more than a year ago.

Mr. Dickson entered the original National company in 1902 and has never been out of the concern since that date. For several years he has been president of the old company, assuming that post after years as vice-president.

## Trade Bodies Cannot Circulate Statistics

Attorney General Clamps Lid on  
Output, Distribution and  
Price Data

WASHINGTON, Jan. 15—The Department of Justice has ruled that a trade association may not legally circulate statistics concerning production, distribution and prices among its own membership. Such acts, the Department rules, are violations of the anti-trust laws.

The mooted question as to how far trade associations may go in their activities was referred to the Department of Justice by Secretary of Commerce Hoover in order that trade associations in general might know their exact status and also cooperate with the Department of Commerce in compiling statistics of the various trade associations.

The decision, as rendered by Attorney General Daugherty, however, would seem further to curtail trade association activities, which the Department of Commerce is seeking to broaden, insofar as the law makes it permissible.

### Hoover Requested Opinion

In a letter requesting the opinion, Secretary Hoover suggested that the "collection and distribution of unidentified information and statistics as to production, stocks on hand, and prices on closed transactions, provided it is made available on fair terms" to the public as well as those within the association, might not be a violation of the law.

The Attorney General, however, failed to agree, although Mr. Hoover expressed fear that trade associations which now collect such statistics and turn them over to the Government might cease to cooperate if refused the right to circulate their own figures.

The gist of the ruling follows:

Trade associations legally may collect and turn over to the Commerce Department statistics concerning production and distribution, as well as prices of the commodities with which their industries deal. They may not, however, circulate such data among their own memberships.

### Exchange of Information Unlawful

In the judgment of the Department (of Justice) the effect of general information as to the conditions of an industry, such as the total production, shipments, stocks on hand and the average price, or range of prices, is entirely different from that resulting from each person engaged in an industry receiving directly, or through a common medium, reports which reveal to him the exact condition of the business of all of his competitors. Again, the idea seems to be prevalent that no exchange of information between the members, regardless of its extent or character, can be unlawful if at the same time publicity be given thereto through the press or some governmental agency.

(Continued on page 157)

## Hearings on Excise Tax Repeal Started

Hanch of N. A. C. C. and Chalfant of M. A. M. A. Appear  
Before Committee

(Continued from page 148)

owner of a motor vehicle, whether he be a farmer, a factory employee, or a merchant, when he has a break down or a blow-out, to have to buy the parts to repair the vehicle; but when Uncle Sam comes along and collects tribute on top of that, as has been said before, he is no Good Samaritan.

Argument was presented to refute the still existing fallacy that an automobile is a luxury. Mr. Hanch said:

Probably the second largest class of users of motor cars are the American farmers. The latest figures show that 4,250,000 are used on the farms. They use them, I think, almost entirely for going with their products to market and purchasing their supplies and taking their families to the towns for shopping, and for what may be said almost entirely to be utilitarian purposes.

The largest class of user is the employee of factories and mercantile institutions—used in going to and from his work. He does not regard the use of his automobile as a luxury. It's a necessity, and taxing him for it as a luxury is unjust.

### Tax Has Not Helped Growth

In response to questioning, Mr. Hanch admitted that the automobile industry during the last two years has prospered. "We do not deny that the automobile industry has grown rapidly," he said. "It has been a very active industry, but we do not for one moment admit that the tax has helped it; and there is not any doubt that the tax has had a detrimental effect upon it, notwithstanding its great proportion."

The value of the purchasing power of the automobile dollar, now worth 111 cents, the speaker cited as one of the reasons for prosperity in the automobile industry. Figures and facts were presented, however, showing that not all of the automobile companies had prospered. During the last two years, the figures show, sixty manufacturers have gone into the hands of receivers, liquidated or gone bankrupt. The names of a few of the most prominent were cited.

### Truck Tax Should Have Come Off

The excise tax on motor trucks, the speaker told the committee, should have come off when the Government abolished the tax on railroad transportation. Figures were presented the committee and argument was made showing that many railroads, shippers and carriers used trucks as well as railroads in the transportation of goods.

As matters now stand, Mr. Hanch added, the carrier can use the railroads free of excise taxes while he must transfer his goods and haul them a part of the way in a truck, yet pay for transportation excise taxes on the truck haulage. This, the speaker pointed out, "is discrimination, pure and simple."

Following the appeal for removal of the tax on trucks, a great deal of argument ensued between the speaker and various members of the committee as to why trucks should not be heavily taxed because they are the hardest on roads, built in part by the Federal Government.

Figures were read into the record by Mr. Hanch showing what proportion of Federal taxes is expended on highways, and how much is collected from the automobile industry. These figures showed, in brief, that for every 50 cents spent by the Federal Government on highways one dollar is collected from the automobile industry.

### Chalfant Addresses Committee

The repeal of the excise taxes on automobile parts and accessories was urged before the committee by the Motor and Accessory Manufacturers Association. The spokesman for that body was E. P. Chalfant, chairman of the board of the Gill Manufacturing Co. of Chicago and a member of the board of directors of the association.

His organization, he told the committee, represents about 60 per cent of the manufacturers of automobile parts and accessories, doing about 80 per cent of the volume of business.

Figures presented showed that the motor and accessories manufacturers last year did a gross volume of \$2,070,000,000 of business. Of this amount \$1,270,000,000 went to the manufacturers of completed vehicles. An excise tax was paid upon the remaining \$800,000,000, amounting to \$40,000,000.

"This \$40,000,000 was a hard luck tax," Mr. Chalfant told the committee. "It constitutes an additional penalty to the individual who was unfortunate enough to require either a repair to, or the restoration of, some essential part of his motor vehicle."

### Pays Tax for Hard Luck

The speaker laid stress upon the fact that the purchaser of an automobile must pay his initial excise taxes, under the present law, then, suffering a misfortune, he must pay an additional tax on his hard luck. "Such was never the intent of the law," he declared, "although it was the construction put upon our case, and Congress cannot too soon rectify this unfairness."

The administration features of the present law, as applicable to the motor and accessory manufacturers, have resulted in a great deal of uncertainties and difficulties, Mr. Chalfant pointed out, citing the case of the vehicle spring manufacturers, who, he said, had been given three different rulings in the last eighteen months by the Bureau of Internal Revenue on vehicle springs.

The first ruling was that vehicle springs were taxable, then that they were not, and a third ruling that they were. "When springs were held not to be taxable, the manufacturer ceased to pass the tax burden and the Government made refunds. Then with the reversal, the spring makers are faced with demands

(Continued on page 160)

## Road Builders' Show Is Biggest Yet Held

Exhibit of Machinery in Coliseum,  
Chicago, Represents Value  
of \$1,500,000

CHICAGO, Jan. 15—Belt conveyors in action, massive cranes, pumping machinery, tractors and trucks, the largest collection of road-building machinery ever assembled under one roof—all tell a story of miles of roads to be built to meet the prodigious growth of the automotive industry. Last year's show of the American Road Builders Association was big, but the one now in progress under the same auspices in the Coliseum far surpasses it.

The first piece of equipment to be set in place was a huge crane, one piece of which weighed twenty-seven tons. Then came steam shovels, mixers, hoists, pumps and rollers. Most of the machines had to be erected after they were inside the building, while a large number had to be hoisted to the balcony forty feet above the floor.

### Exhibits Driven to Show

Many of the exhibitors delivered their exhibits over the highways directly from their factories to the Coliseum.

The record, however, in using the highways to promote more highways was made by the Universal Crane Co. This concern drove its mammoth motor truck mounted locomotive crane from the factory at Elyria, Ohio, to the show without a mishap, the temperature at the start of the trip being 10 deg. below zero.

According to Frank Page, president of the association, there are from 2700 to 3000 tons of equipment being exhibited, with some 250 individual exhibits showing machinery valued at \$1,500,000, while it is estimated that about 30,000 visitors will have passed through the Coliseum doors before the show terminates on Saturday.

### Significant to Industry

To the automotive industry the show is doubly significant. First, there is the heavy demand for automotive products to build the roads. Trucks and tractors, pumping engines, power-driven mixers, all are required in this movement to advance the cause of motor transportation. Then there is the increased market that good roads make available, for the most optimistic prophets from year to year have found themselves too conservative in trying to predict the scope of motor car production.

Machines alone, however, do not tell the whole story of the show. Concrete and tile, asphalt and steel, conduits of clay and metal—all find their place in this movement, which is portrayed at the show and will be discussed at the convention of the American Road Builders Association at the Congress Hotel, in which the various problems in connection with construction will be presented.



## Recommend Balloon Inflation Pressures

### Tire and Rim Association Draws Up Tentative Table for Sizes and Loads

NEW YORK, Jan. 11—Inflation pressures for balloon tires was the most important subject considered at the meeting of the Tire & Rim Association, held here yesterday.

A tentative table of pressures for various sizes and loads was referred to the Rubber Association of America for approval. This contemplates a nominal pressure of 34 to 36 lb. per sq. in. for all balloon sizes, with increase or decrease in 2 lb. steps to meet varying conditions of load and to take care of different sizes of balloon tires on the same make of car.

A committee of the association made a progress report on the subject of load-carrying capacities of solid tires. A further report is to be presented at a later date.

An alternative marking for balloon tires was proposed for consideration by the Rubber Association. This is understood to contemplate a marking such as: 32 x 6.20, fits 4½ in. rim of 20 in. diameter, instead of the present marking, which simply is 6.20—20; other sizes to have corresponding markings.

It was voted to appoint a committee whose function is to collect data on valve dimensions and to formulate tentative standard sizes for various types of pneumatic tires.

A suggestion that rims for 26 x 3 in. motorcycle tires be made from standard stock of uniform thickness, such as is used in making passenger car rims, was approved.

### Ricker Will Also Serve as Duesenberg Receiver

INDIANAPOLIS, Jan. 14—Chester S. Ricker, general manager of the Duesenberg Automobile & Motors Co., which was placed in a receivership a week ago, with W. T. Rasmussen as Indiana receiver, has been appointed Delaware receiver for the concern.

Mr. Ricker will be appointed co-receiver with Mr. Rasmussen in Indiana, and the latter will be made Delaware co-receiver. This throws the management of the company into the hands of the two receivers, who will operate the plant jointly.

### Rote Company to Make New Imitation Leather

AKRON, OHIO, Jan. 15—Announcement has been made that the Rote Leather Products Co., occupying the former Phoenix Rubber Co. plant, will start production on imitation leather for automobile manufacturers within the next month.

## THE TENTATIVE TABLE OF LOAD AND INFLATION PRESSURES FOR BALLOON TIRES

Submitted through the Tire and Rim Association to the Rubber Association for approval

Inflation Pressure, Lb. per Sq. In.	Nominal Section Diameter of Tire (In.)			
	4.40	5.25	6.20	7.30
	Load (lb.)			
26	550	725	950	1,200
28	590	780	1,020	1,300
30	630	835	1,090	1,400
32	670	890	1,160	1,500
34	710	945	1,230	1,600
*36	*750	*1,000	*1,300	*1,700
38	799	1,055	1,370	1,800
40	830	1,100	1,440	1,900

\*Desirable load and inflation pressure.

The company purchased the Phoenix plant more than a year ago and has spent the major portion of the intervening period in perfecting its product. Financing of the company was done privately, and the stock is closely held. B. W. Rote, for a number of years connected with Ohio industries, is president.

### Colin Campbell Resigns; Knudsen Is New Manager

NEW YORK, Jan. 16—A. P. Sloan, Jr., president of the General Motors Corp., has announced the acceptance of the resignation of Colin Campbell, general sales manager of the Chevrolet division. The resignation was tendered previous to the New York dealer meeting, show week, and was effective Jan. 1.

C. E. Dawson, who will be acting general sales manager, for some years has been principal assistant to Mr. Campbell and is well known in the Chevrolet organization and in the industry.

W. S. Knudsen, appointed general manager for the division, has been production manager for Chevrolet for about three years coming from the Ford Motor Co., with which he had served as production manager for a long period.

### Martin-Parry Corp. Buys Oakes Co., Paying Cash

YORK, PA., Jan. 16—The Martin-Parry Corp. has purchased for cash the Oakes Co. of Indianapolis, manufacturer of metal stampings and drawings, according to John J. Watson, Jr., chairman of the board.

The corporation has been one of the largest customers of the Oakes company, which does a business approximating \$1,000,000 a year.

### G. M. BUYS ARMSTRONG SPRING

NEW YORK, Jan. 16—General Motors Corp. has purchased the Armstrong Spring Co. of Flint, Mich., which will be known as the Armstrong Spring Division of the General Motors Corp. R. T. Armstrong will be general manager.

## Sheet Steel Buying for Spring Is Slow

PITTSBURGH, Jan. 14—The Independent sheet mills booked practically twice as much business in December as they shipped, but buying this month is not maintaining the same ratio. None of the business taken thus far, even from the automobile companies, is for shipment beyond March 31.

As the same ease of delivery prevails as in the latter part of 1923, automobile companies and parts makers of any size are specifying fairly liberally with the local mills, such orders to apply on contracts. Thus far, however, they have not signed any contracts, but this is not giving the steel producers any concern.

As they put it, orders run the mills and not contracts, but the situation may be summed up briefly by stating that the bulk of the spring buying of sheets for the automobile companies is yet to be placed.

Practically none of the larger concerns except Ford has arranged for all the sheets it will consume for the spring trade. What the object is now is not understood by the steel makers. They feel that the price situation is safe, so there is no cause to worry. The steel maker now predicts a heavier buying movement before the end of this month, as the automobile manufacturer now has but four to six weeks in which to produce his cars for spring delivery.

Probable buying is all figured on the production schedules announced by the automotive companies which appear to be well situated on strip steel and the heavier steel products.

### Safety Essay Winners Received by President

WASHINGTON, Jan. 16—President Coolidge today received the three young women who won prizes in the national safety essay contest promoted by the Highway Education Board, with prizes donated by the National Automobile Chamber of Commerce.

## Ford Plans 500 Daily at Philadelphia Plant

Factory, Representing \$5,000,000  
Investment, to Be Finished  
This Year

PHILADELPHIA, Jan. 15—When completed, probably the latter part of the year, the Ford Motor Co. plant here will give employment to more than 2000 persons, with an annual payroll of approximately \$5,000,000. The structure will be 301 by 1030 ft., one story, of brick and concrete, and will represent an investment of more than \$5,000,000. Production is planned for 500 cars a day.

The building will contain 349,160 sq. ft. of floor space. Assembly and body-building operations will occupy all of the building, except one end, which is to house branch offices and showrooms.

The power plant will contain four 500-hp. boilers. These will operate two turbo-generators of 1000-hp. each, necessary to provide electrical energy for power and light. The engineers have devised a system whereby the heat for the building and the drying ovens of the body plant will be furnished by exhaust steam from the turbines. These turbines and generators will be built by the company at its Detroit plant.

The contractors here have received plans and specifications for a railroad siding for the Ford plant. There will be a single depressed railroad track running into the building which will accommodate twenty-six cars. Through systematic handling, the Ford engineers estimate that the plant will turn out a car every 57.6 seconds during the eight-hour day.

The body department will be equipped to produce 500 bodies a day. Engineers also are planning the construction of a conveying system with 3200 ft. of continuously moving conveyors of special design.

### Will Build 150 Daily in Florida

ATLANTA, GA., Jan. 15—According to the Atlanta branch of the Ford Motor Co. construction of the large assembly plant at Jacksonville will begin at a comparatively early date, the plant to be somewhat larger than originally planned.

An additional acreage on the waterfront has been purchased by the company from the city of Jacksonville for \$50,000, which is in addition to a \$56,000 purchase of a site previously made. The plant will represent an investment of about \$350,000, and will have a daily capacity of about 150 Ford cars.

### TIME SET FOR OGREN CLAIMS

MILWAUKEE, Jan. 14—Julius J. Goetz, recently appointed receiver of the Ogren Motor Car Co., has given notice to creditors that all claims must be filed within six months of Jan. 10. The litigation started in the form of a petition for a receivership to the Milwaukee County

## AKRON WISHES EXCISE TAX TO BE REPEALED

AKRON, OHIO, Jan. 15—The Akron Chamber of Commerce directorate has passed a resolution petitioning Ohio Congressmen at Washington to support the Clancy bills, repealing the 5 per cent excise tax upon automobile tires and other automobile accessories.

The resolution sets forth that the excise tax, which is now operative, is primarily a war measure and with the actual passing of the state of war this tax should be abrogated.

Although the chamber in its resolution sets forth no figures as to the amount of the excise tax, it is estimated that Akron tires pay in the neighborhood of \$1,500,000 excise taxes annually, which are passed on to the consumer by the manufacturer in one form or another.

Circuit Court, made by the Cleveland (Ohio) Hardware Co. The Ogren company suspended production of the Ogren Six about July 1, 1923, and the bulk of its shop equipment has been sold.

## Morris Purchases Plant for Light Truck Making

LONDON, Jan. 8 (by mail)—It is reported that Morris, who has by far the biggest output of passenger cars in England, has bought the manufacturing plant and equipment of Wrigley & Co., Birmingham, for £200,000. That company on a share and mortgage capital of £679,000 has reported losses in the last two years amounting to nearly £100,000, the shares having been quoted recently at one-eighth their normal value.

Up to the present Morris has not definitely announced the purpose to which he intends to put this additional plant, but it is currently reported that he intends to produce light trucks there. The only Morris commercial vehicle offered until now has been those with delivery bodies on the standard passenger car chassis.

Morris, early in 1923, bought the Hotchkiss English plant at Coventry, where its power units were being made under contract, the chassis being assembled at Cowley, near Oxford. Since last summer Morris had extensions of the Coventry plant in hand that will nearly double its capacity. These will soon be completed and will assist toward increasing the passenger car output from the 20,000 of 1923 to the 50,000 scheduled for 1924.

### VELIE SHIPPING NEW MODEL

MOLINE, ILL., Jan. 16—Shipments of the new Velie 56 began this week, and the factory has been placed at full production, six days a week.

## Ford Lists Complete 1-Ton Truck at \$490

All Steel Combination Body and  
Cab Makes Reduced Price of  
Vehicle Possible

DETROIT, Jan. 15—With the start of quantity production of its new body and cab, Ford Motor Co. is announcing its one-ton truck complete at \$490. The company has been able to build only a limited quantity of the complete trucks to this time, but within the next few months will be in large production and will be making deliveries through all its dealer organization.

The new body is not built by Ford, but is of Ford design and is being shipped to the many assembly plants of the country for assembly into the complete truck. It is the all-steel combination body and cab which the company said last year it would build to reduce the price of the complete vehicle to the purchaser. In addition to the lower price made possible, the company indicates that delivery of a complete vehicle will greatly increase sales possibilities.

The body is of the express type, but is convertible into other types by use of stakes, sideboards, canopy top and screen sides. It will meet both agricultural and commercial requirements at low cost. The all-steel features are designed to meet severe usage and wood reinforcements are used to lessen vibration and road shock.

Loading space is 7 ft. 2 in. long by 4 ft. wide. The end gate is braced and secured by heavy chains to hold it in position when lowered. The cab is extra roomy, the seat artificial leather and cushioned on 4-in. springs. There are close-fitting door cushions which open with the door. Rear vision is offered by an oblong window.

## Lighter Truck Output Increases in England

LONDON, Jan. 8 (by mail)—According to a memorandum recently issued by the Association of British Motor Manufacturers dealing with the output of eleven British truck makers for four years up to the end of 1922, the proportion of trucks with a load capacity of from 25 to 40 cwt. (2800-4480 lb.) increased from 12.9 per cent in 1919 to 33.6 per cent in 1922.

In 1919 vehicles of 4-tons capacity and over represented 48.4 per cent of the total, but these had fallen to 24.4 per cent in 1922. During the same period 2½-3½-tonners increased from 38.7 per cent to 42 per cent.

From the incomplete reports available relating to 1923 production, it is estimated that the proportion of light trucks will show a further marked increase but if it were not for bus and motor coach chassis, the output of heavy types would probably be almost negligible in comparison with other types.



## Crane Elected Head of S. A. E. for 1924

Announcement Made at Annual  
Dinner—Dr. M. L. Burton  
Chief Speaker

NEW YORK, Jan. 15—Results of the election of officers of the Society of Automotive Engineers for the ensuing year were announced at the annual dinner of the society, held at the Hotel Astor. The entire ticket, headed by Henry M. Crane of the General Motors Corp., was elected without opposition.

The new officers are as follows: President, H. M. Crane; first vice-president, E. A. Johnston; second vice-presidents, W. R. Strickland, representing motor car engineering; J. F. M. Patitz, tractor engineering; H. L. Pope, aviation engineering; W. C. Ware, marine engineering, and T. B. Fordham, stationary internal combustion engineering; treasurer, C. B. Whittlesey; councillors for the term 1924 and 1925, J. H. Hunt, A. K. Brumbaugh and M. P. Rumney.

Speakers at the dinner included Herbert W. Alden, retiring president; Dr. M. L. Burton, president of the University of Michigan; Edward S. Jordan, who acted as toastmaster; Henry M. Crane, president-elect, and "Bugs" Baer, humorist. Dr. Burton's address, entitled "That Mind of Yours," was well received.

Mr. Crane spoke of the need for wider application of standards in production work and the value of research work to the industry. He urged executives to see that their representatives in Congress make adequate appropriations for continuance of the valuable automotive research work done at the Bureau of Standards.

The importance of the activities of the various section organizations of the society was emphasized. It was announced that past President B. B. Bachman will act as chairman of the Sections Committee.

## Heller Tells Manufacturers of Good Outlook This Year

CHICAGO, Jan. 12—The Chicago group of the Automotive Manufacturers' Association at its meeting last week was addressed by E. H. Heller, president of the Hill Pump Valve Co., on business prospects for 1924. Mr. Heller had personally made an extensive survey of existing conditions and had collected opinions from many reliable sources, both in and out of the automotive industry. His own company manufactures a varied line of automotive products.

Mr. Heller said unsettled conditions in Europe had failed to depress business in general and the automotive business in particular in the United States. He attributed this to the fact that the greater part of the American production is consumed at home. He predicted continuation of prosperity for the automotive industry.

Another speaker at this meeting was Edward F. Feeley, United States commercial attaché at Buenos Aires, who discussed the possibilities of the Argentine as a market for automobiles and automotive accessories. He said that out of a total of 90,000 cars in the country, 70,000 are registered in Buenos Aires. Importations for 1924, he said, probably would average 2400 cars a month, and he expected most of these to be American make.

## Overland Turning Out 100 Cars Daily in Philadelphia

PHILADELPHIA, Jan. 16—The big Willys-Overland plant, formally opened here Monday, is operating on a schedule of 100 cars daily. Its capacity will be more than 200 cars a day. The plant, situated on the Pennsylvania, Reading and Baltimore & Ohio railways, covers more than fourteen acres and will be known as an assembling base, expediting the distribution of Overland cars for the Willys-Overland of Philadelphia.

The branch serves eastern Pennsylvania, southern New Jersey, Delaware, Maryland, Virginia, parts of West Virginia, North Carolina and Tennessee.

George D. McCutcheon, president of this company, is also head of the newly established Willys-Overland Atlantic Co., as the Philadelphia assembling concern is called.

## Laws to Curb Accidents Asked by Governor Smith

ALBANY, N. Y., Jan. 14—In a special message to the Legislature, Governor Smith recommends the enactment of laws to reduce the number of automobile accidents. He advocates the extension of the present law governing the licensing of operators (not chauffeurs) to cover the entire State instead of applying only to New York City owners.

He suggests the creation of a Central Bureau of Motor Vehicle Records to handle accurate information of all accidents, to be supplied by local authorities, and to compile as nearly as possible an accurate history of every person licensed to operate a car in this State, and he also wants the power to revoke licenses lodged with the State Commission of the Tax Commission.

## Rolls-Royce Rearranges Plant for Bigger Output

SPRINGFIELD, MASS., Jan. 15—Rolls-Royce of America, Inc., has completed plant rearrangements for the purpose of obtaining better sequence and more rapid dispatch in the processes of manufacture and assembling. It is estimated that these changes will enable production to be increased by nearly 25 per cent.

Production is being raised to the maximum by augmenting the plant force. Plans are also being made for the better distribution of cars by establishing new contacts for merchandising.

## Automotive Boosters Form Overseas Club

Has Twenty-five Members at Beginning, With H. L. Kraus  
Its President

NEW YORK, Jan. 15—The ninth club affiliated with the Automotive Boosters International has been organized here among the export representatives of automotive manufacturers, and will be known as the Overseas Club.

H. L. Kraus, export manager for Apco, Biflex and Simmons, has been elected president, with F. J. Werner, who heads the Shaler Export Corp., as vice-president. Charles H. Moulton, foreign service manager of El Automovil Americano, is secretary, with C. E. Murrell of the Exide export department, treasurer.

Directors of the new organization, in addition to the officers, are R. A. Rodriguez of Rodriguez & Co.; Walter Rinck, export manager for Stevens & Co.; J. M. Homs of Pablo Homs, Inc.; P. F. Baillet, export manager of the Sparks-Withington Co., and George E. Quisenberry, editor of El Automovil Americano.

Tentative committees which will complete the organization work include the following: Meetings, F. J. Werner, chairman; membership, Walter Rinck, chairman, and out-of-town members, P. A. Karl, export manager of the Brunner Manufacturing Co. as chairman.

The new club will be limited to export executives, managers and representatives of manufacturing companies, carrying out the principles adopted by the other Booster organizations throughout the country. The membership at the start is approximately twenty-five.

## Daily Tire Output Nears 95,000 in Akron District

AKRON, OHIO, Jan. 15—Production of automobile and truck tires is climbing close to the 95,000 unit a day mark in the Akron district, with further increases to be expected. A year ago production mounted to 112,000 tires a day in this district. At the present time it is doubted if the entire Ohio territory is making that many tires.

The present output is more than 20,000 in advance over production two months ago. Since that time the Goodyear Tire & Rubber Co. has 29,000 tires a day; the Mason Tire & Rubber Co. has again gone into production at its Bedford plant and increased its output at the Kent unit; the B. F. Goodrich Co., as well as the other large and small companies, have all shown material increases in unit output.

## BODY BUILDERS' MEETING

NEW YORK, Jan. 15—The midsummer meeting of the Automobile Body Builders' Association will be held at the Hotel Statler in Detroit June 3 and 4.

## Men of the Industry and What They Are Doing

### Little Granted Leave of Absence

J. H. Little, director of purchases of Durant Motors and for the last ten years associated with W. C. Durant, has been granted a leave of absence in order to accompany Mrs. Little, who is ill, to lower California, where he will take up his residence temporarily. Frank J. Martin, who has been Mr. Little's assistant, will act in the capacity of director of purchases until Mr. Little returns, while Paul A. Schmidt will fill the position of assistant director of purchases.

### Bakewell Returns Home

George M. Bakewell, special representative of the Champion Spark Plug Co., has returned from a two years' trip abroad, during which he visited practically every foreign country. In addition to surveying the overseas market, his efforts were directed toward establishing the same sales policy for Champion products as is followed in the United States.

### Olson in New Connection

Gus Olson, Jr., sales engineer of the Yellow Sleeve-Valve Engine Works, Inc., has resigned to become branch manager for the William Esley Machinery Co. of Chicago, which, it is understood, will open a quad-city branch with Mr. Olson in charge. His place with the Yellow Sleeve will not be filled for the present, Louis Ruthenburg, general manager, stated. Mr. Olson formerly was chief engineer for the R & V Motor Co.

### Clark Represents N. A. C. C.

C. P. Clark, recently appointed district representative in the San Francisco section for the National Automobile Chamber of Commerce, will establish his headquarters in that city. He will cover Washington, Oregon and California, and his work will include an analysis of economic, industrial and market conditions for the benefit of automobile manufacturers in making up their production schedules.

### Bowser Promotes Davies

C. H. Davies, manager of the factory division of S. F. Bowser & Co., in Chicago, has assumed charge of the factory sales promotion division of the entire Bowser organization, with headquarters in Fort Wayne, Ind. Mr. Davies relieves L. E. Porter, assistant general manager of this branch, of promotional work and now works in collaboration with T. D. Kingsley, general sales manager.

### Wendover with Dunlop

Alfred L. Wendover of Mount Vernon, N. Y., has been appointed manager of the New York branch of the Dunlop Tire & Rubber Co. Mr. Wendover has been in the tire industry since 1906, starting

with Morgan & Wright, joining the United States Rubber Co. in 1910, and continuing with that concern until his recent change to Dunlop.

### Pyrene Appoints Bunnell

C. M. Bunnell has been named manager of the Off-N-On skid chain sales department of the Pyrene Manufacturing Co. Mr. Bunnell has been general sales manager of the Torrington Co. of Torrington, Conn., for many years. Previous to that time he had charge of the automobile lamp department of the General Electric Co.

### Graham Manages Supreme Roller

D. F. Graham, for many years identified with the bearings field, has been appointed general manager of the Supreme Roller Bearing Corp., Coudersport, Pa.

### Lydy Heads English Champion

R. A. Lydy has been appointed continental manager for the Champion Sparking Co., the English branch of the Champion Spark Plug Co. His headquarters are in London. R. Calnwaerts has been named the new head of the French branch, with headquarters in Paris.

### McCoy Bank Director

Edward E. McCoy, president of the Rees Manufacturing Co. of Pittsburgh, has been elected director and vice-president of the Third National Bank of Pittsburgh. Mr. McCoy remains as the active head of the Rees company, in addition to handling the new duties of his position with the bank.

### Harris Succeeds Stiehl

R. W. J. Harris, for many years identified with the Vermilion Malleable Iron Co., has been appointed general manager of the company, succeeding Fred Stiehl, recently resigned. George Merritt is now superintendent of the plant, and W. L. Berkey superintendent of the finishing department.

### Bray Represents Ford in Cuba

James T. Bray, chief road man, Ford Motor Co., Milwaukee branch, has been advanced to the position of general representative of the Ford in Cuba, with headquarters in Havana.

### McFarland in Advertising Work

Hays McFarland, formerly vice-president in charge of sales for the Bassick Manufacturing Co. of Chicago, has turned to the advertising business, becoming a partner in the firm of Blackett & Sample, Inc., of Chicago. The concern will hereafter be known as Blackett, Sample & McFarland.

## Chicago Gets Ready for National Show

### Manufacturers, Distributors and Dealers Make Plans for Meetings

CHICAGO, Jan. 16—Preparations are nearing completion for the opening of the national automobile show in Chicago on Jan. 26. The show will continue until the night of Feb. 2, and as usual will be held in the Coliseum and First Regiment Armory, nearby.

Many important gatherings of automobile distributors, dealers and manufacturers are scheduled for the week of the show, one of the most important being the annual convention of the National Automobile Dealers Association on Jan. 29 and 30 at Hotel LaSalle. The annual banquet of the organization will be held the night of Jan. 29 at the LaSalle.

On the same evening the Midwest Rubber Manufacturers Association will hold its banquet at Hotel Morrison, and the Old Timers Club in the gold room of the Congress.

Preceding the opening of the show, the Chicago Automobile Trade Association will hold a dinner on the evening of Jan. 23 for the purpose of arousing interest on the part of salesmen for show week.

The annual meeting of the Automotive Electric Service Association will be held at the Congress Hotel Jan. 30 and 31.

### Lamson Is Norwalk Tire Sales Head

F. L. Lamson has been appointed sales manager of the Norwalk Tire & Rubber Co. Mr. Lamson has been treasurer of the company since its formation in 1914 and has been identified with the rubber industry for the last fourteen years, first with the Diamond Rubber Co. and later with the B. F. Goodrich Co.

### George H. Cox Resigns

George H. Cox has severed his connection with the Willys-Overland Co. after six years' service as manager of the Kansas City branch. For two years prior to that he was assistant director of branches.

### Hartness Heads Engineering Council

James Hartness, president of Jones & Lamson of Springfield, Vt., machine tool builders, has been elected president of the American Engineering Council, to succeed Dean Mortimer E. Cooley of the University of Michigan. Mr. Hartness is a former Governor of Vermont and past president of the American Society of Mechanical Engineers.



## Four Days' Program Arranged for S. A. E.

Annual Meeting of Society Will  
Be Held in Detroit, January  
22 to 25

NEW YORK, Jan. 14—The complete program of the annual meeting of the Society of Automotive Engineers, which is to be held in the General Motors Building, Detroit, Jan. 22 to 25, has been announced by Mason P. Rumney, chairman of the meetings committee.

The program is as follows:

### TUESDAY, JAN. 22.

- 10.30 a. m.—Standards Committee meeting.  
1.00 p. m.—Informal luncheon.  
2.00 p. m.—Standards Committee meeting (Continued).  
2.00 p. m.—Body Engineering Session:  
"Pre-Enameled Closed Bodies," Charles Widman.  
"Casein Glues for Automobile Body Assembling," W. A. Henderson.  
Round Table Discussion: "Bad Effects of Forced Drying."  
W. H. Jones, C. R. Wilson Body Co.  
R. A. LaBarre, Towson Body Co.  
Representative of Drying Systems, Inc.  
"Rust Resistance of Nickel-Plated Steel," E. M. Baker.  
2.00 p. m.—Aeronautic Session:  
"Notes on Sand-Cast Aluminum-Copper-Nickel Magnesium Alloy," A. J. Lyon and Samuel Daniels.  
"Designing for Reliability," G. J. Mead.  
"The Engineering Romance of the Shenandoah," Starr Trustcott.  
6.00 p. m.—Body Men's Supper.  
8.00 p. m.—Ordnance Program:  
"New Ordnance Material," Brig. Gen. J. W. Joyes.  
"The Automotive Industry and National Defense," Brig. Gen. C. L'H. Ruggles.  
9.00 p. m.—Annual Business Meeting (Adjourned Session).

### WEDNESDAY, JAN. 23.

- 10.00 a. m.—Brake Session:  
"Theory and Practical Advantages of Balanced Brake Forces," G. L. Smith.  
"Brake Performance Studies," W. S. James.  
"Four-Wheel Brakes," Henri Perrot.  
1.00 p. m.—Informal Luncheon.  
2.00 p. m.—Motor Truck Transportation Session.  
"Discussion of United States Chamber of Commerce Report on Railroad and Motor Truck Transportation," Robert C. Wright, Pennsylvania Railroad.  
"How St. Louis Is Handling the Delivery of I. C. I. Freight and Using Motor Trucks as a Part of Its Transportation System," R. T. Sangster, St. Louis Chamber of Commerce.  
2.00 p. m.—Body Engineering Session:  
"Wood for Automobile Bodies," A. T. Upson and L. N. Erickson.  
"Automobile Upholstery," K. L. Herrmann.  
"Trimming Materials and Style," H. T. Strong.  
2.00 p. m.—Fuel and Engine Session:  
"Comparison of Ideal and Commercial Carbureters," C. S. Kegerres.  
"Fundamental Improvements in Manifold Design," A. M. Dean, J. W. Swan and C. A. Kirkham.  
9.00 p. m.—The Carnival.

### THURSDAY, JAN. 24.

- 10.00 a. m.—Research Session:  
"Winter Tests Show Greater Dilution with Heavy Fuels," J. A. C. Warner.  
"Cooperative Fuel Research," Roger Birdsell.  
"Radiation Characteristics of the Internal Combustion Engine," Thomas Midgley, Jr., and H. H. McCarty.  
1.00 p. m.—Informal Luncheon.  
2.00 p. m.—Motor Bus Session:  
"Motor Bus Design, Operation and Maintenance," R. W. Meade.  
"Field and Future of the Motor Bus," J. A. Emery.  
2.00 p. m.—Passenger Car Session:  
"Controlling Detonation under High Compression," G. A. Young.  
"Essentials of a Successful Constant-Compression Engine," C. E. Sargent.  
"Notes on Engine Cooling Systems," N. S. Diamant.  
2.00 p. m.—Production Session:  
"Flexible Method of Handling Materials," A. A. Brown.  
"Suggestions to Purchasers and Users of Machine Tools," Thomas Nadin.  
6.00 p. m.—The Section's Dinner.

### FRIDAY, JAN. 25.

- 10.00 a. m.—Production Session:  
"Process and Equipment for Fender and Body Enamelling," Gordon Lefebvre.  
"Crankshaft Production Problems," T. M. Carpenter.  
1.00 p. m.—Informal Luncheon.  
2.00 p. m.—Production Session:  
"Reducing Costs by Efficient Management," T. N. Fordham.  
"Hot Swaging," R. A. De Vlieg.

## Durant, Star and Flint Output Totaled 178,000

NEW YORK, Jan. 15—Durant Motors, Inc., manufactured 178,000 Stars, Durants and Flints in 1923, three times its 1922 production of 59,000 Stars and Durants. While no attempt has been made to forecast the production possibilities of 1924, it is estimated at headquarters that Star production alone will run about 200,000 and Durant and Flint 25,000 each.

In all probability the new factory, which is going up at Flint and which originally was intended for the Star, will be used for the new Eagle, which made its public bow during New York show week. It will be at least three months before this car is in production.

At present Stars and Durants are being produced at the Elizabeth, Lansing, Oakland and Leaside plants, while Flint is divided between Flint and Long Island City, each making about twenty-five a day. Stars are approximating 400 a day and Durants from sixty to seventy, it is stated.

## Senate Votes to Create Bureau of Aeronautics

WASHINGTON, Jan. 15—The Senate has passed the Wadsworth bill, creating a bureau of aeronautics in the United States Department of Commerce.

The research department of the Bureau of Standards, which is concerned with research in the automotive field, will also do research work for aeroplane engines.

## Trade Bodies Cannot Circulate Statistics

Attorney General Clamps Lid on  
Output, Distribution and  
Price Data

(Continued from page 151)

In the judgment of the Department this idea is likewise fallacious. The illegality as well as the evil results arise from the cooperation among the members pursuant to a positive or tacit understanding; and this cooperation is not affected by publicity. Those who purchase the commodity, though fully informed as to the activities of the association, can protect themselves only by an organization and cooperation of like character, which, if it were lawful, is an impossibility upon the part of the public.

### Automotive Bodies Not Affected

WASHINGTON, Jan. 16—Belief that the Department's ruling would in no wise affect any of the activities of the National Automobile Chamber of Commerce or other trade associations affiliated with the automobile industry, was expressed by Alfred Reeves, general manager of the N. A. C. C. Mr. Reeves also is president of the American Association of Trade Executives.

"From my knowledge of the automotive trade associations, their activities in the collection and dissemination of data on their business are not such that they would be affected," Mr. Reeves said. The activities of the chamber will not be curtailed as a result of the ruling.

Mr. Reeves stated:

We shall probably employ counsel to study and advise us in the matter. The N. A. C. C. distributes each month the figures showing distribution and every three months the amount of money received by the manufacturer. Individual prices are not given. The figures do not disclose any but a lump sum.

Before the N. A. C. C. makes any change in its present practice it will be on the advice of legal counsel as to whether or not we are infringing any present law.

The practices of such organizations as the U. S. Tile Credit Association, which brought about the ruling of the Department of Justice, is having a harmful effect on the 95 per cent of the trade associations which are trying to conform to the letter of the law, Mr. Reeves said.

### Most Associations Conform to Law

He added:

Neither the American Trade Association nor I personally hold briefs for any association that conspires, as the evidence seems to indicate the Tile Credit Association did, in reporting to fellow members such facts as stocks on hand, stocks sold, prices at which they were sold, and in furnishing each other with withdrawal receipts from warehouses and duplicate sworn statements of bank deposits each day.

The bulk of the trade associations of the country, probably 95 per cent of the whole number, are conforming to the law, and should be given an opportunity to grow and prosper and should not be made to bear the onus of the other 5 per cent.

## Program Announced for Motor Congress

Event Will Be Held in Detroit,  
May 21-24, Under Aus-  
pices of N. A. C. C.

NEW YORK, Jan. 16—The program for the Motor World Transport Congress to be held in Detroit May 21 to 24, under the auspices of the National Automobile Chamber of Commerce, has been announced by George F. Bauer, secretary of the N. A. C. C. Foreign Trade Committee. It is as follows:

### WEDNESDAY, MAY 21

9:30 A. M.—Preliminary assembly of delegates in the banquet hall of the Hotel Statler.

10 A. M.—Official welcome of delegates.

Motor Vehicle session, Part 1—Addresses and discussions centering around different economic services actually being performed by the automobile and motor truck and on possible extension of these and other similar utility uses in all countries of the world.

12:15 P. M.—Luncheon in honor of the delegates from Europe. During this luncheon there will be a review of automotive conditions, problems and possible solution of them by speakers chosen from European countries.

2 P. M.—Motor Vehicle session, Part 2—A vocational automotive tour for delegates to demonstrate the actual uses of motor vehicles by public, industrial, agricultural, mining, commercial and Government enterprises.

6:30 P. M.—Reception and entertainment of the delegates.

7:30 P. M.—Engineering session. Addresses illustrated by slides and motion pictures, with the cooperation of the Society of Automotive Engineers.

### THURSDAY, MAY 22

10 A. M.—Finance session. Addresses and discussions as to means for providing financing facilities of shipments to dealers, also retail automotive sales and broader aspects of finance pertaining to large purchases of equipment by Government and public utility enterprises.

12:15 P. M.—Luncheon in honor of delegates from the Asias, at which conditions affecting automotive trade in those countries and Australia will be reviewed.

2 P. M.—Business promotion session at which principles of advertising and general promotional activities will be discussed.

7:30 P. M.—Servicing session. Topics to be considered will embrace policies and methods of servicing in accordance with plans arranged cooperatively with officers of the National Service Congress, which will meet in Detroit at about the same time.

### FRIDAY, MAY 23

10 A. M.—Servicing session Part 2—Visit to special exhibit of modern equipment in actual operation and use in a modern servicing station. Admittance to be accorded at the time only to delegates of the two congresses.

12:15 P. M.—Luncheon in honor of delegates from Africa.

2 P. M.—Highway session, Part 1—Automobile tour of environs of Detroit where exhibits will be provided of different types of road construction and maintenance.

7:30 P. M.—Highways session, Part 2—Topics will comprise general economics of the highway, the training of road engineers, the financing of road construction and maintenance, and the relation of the highway to other means of transportation.

### SATURDAY, MAY 24

10 A. M.—Legislative session. In addresses and discussions efforts will be made to determine what principles underlie equitable motor legislation and how Governments are applying them to secure greatest economic benefits from motor transport for their respective countries.

12:15 P. M.—Luncheon in honor of delegates from the Americas.

2 P. M.—Cooperation session. Addresses and discussions will be devoted to determining what functions are being performed by the automobile owners' associations, dealer organizations, manufacturers' associations and other bodies in advancing through co-operation interest in motor transport throughout the world.

7:30 P. M.—Banquet in honor of all delegates to the World Motor Transport Congress.

## War on Gasoline Prices Renewed in South Dakota

MITCHELL, S. D., Jan. 14—Governor McMaster again has become a factor in the gasoline war.

Following the announcement of an increase of two cents a gallon by the Standard Oil Co., the governor sent a carload of motor fuel to the State station, with orders to retail it at 16 cents a gallon, the figure he set last summer when he led the fight against high prices. The Standard Oil price now is 22 cents.

## Hupp Sees Good 6 Months; Planning 50,000 for Year

NEW YORK, Jan. 14—Good selling conditions are practically assured for at least the first six or seven months of 1924, O. C. Hutchinson, general sales manager of Hupp Motor Car Corp., told dealers at the New York show meeting, so much so that the company is planning on 50,000 production during the year.

Sales in 1923 totaled 38,279, and the company was obliged to cancel orders for 7500 cars owing to heavy demand when the factory was undergoing changes incidental to new models.

## Rickenbacker Arranges for Financing of Sales

NEW YORK, Jan. 14—At the annual luncheon of the Rickenbacker Motor Car Co. during show week, Capt. E. V. Rickenbacker announced the completion of arrangements with the Commercial Credit Corp. of Baltimore and subsidiary companies, with resources totaling \$66,000,000, to handle the wholesale and retail financing of Rickenbacker cars.

He also briefly reviewed the growth of the Rickenbacker company in its two years of existence, and pointed out that with no indebtedness the company now has a total of \$1,000,000 surplus in the bank.

## Erskine Forecasts Big First Quarter

Declares That 1,000,000 Cars and  
Trucks Will Be Built in  
That Period

NEW YORK, Jan. 14—Speaking at the dealer banquet of the Studebaker Corp., during show week, President A. R. Erskine outlined his policies for 1924, predicting that the first quarter of this year will see a production of 1,000,000 cars and trucks by the automobile industry.

Mr. Erskine said:

The industry has capacity for 5,600,000 cars this year, but I am not going to attempt to estimate the probable production for 1924. I look, however, for the manufacture of a million cars in the first quarter.

So far as the Studebaker Corp. itself is concerned, we have more orders for spring delivery on our books right now than we ever had before. We are in position to manufacture from 15,000 to 16,000 cars a month and we look to get Studebaker's share of the business. We are not going to crowd the dealers, but we are going to be in position to meet any and all demands for cars.

Mr. Erskine reported the manufacture of 150,000 cars in 1923, of which number 145,112 were sold, leaving the corporation with 5000 cars on hand at the first of the year to meet the dealers' pressing needs. The 1923 output at factory list without deductions for taxes, etc., represented \$201,000,000.

The corporation, because of the successful expansion plans, made at a cost of \$15,000,000, is well prepared for any manufacturing demands, Mr. Erskine said.

### Can Produce 180,000 a Year

Answering the call of Vice-president H. A. Biggs, who acted as toastmaster, Vice-president M. F. Wollering talked production, telling the dealers that if necessary the Studebaker plants can turn out 180,000 cars a year. He told of the construction of an \$8,000,000 closed body plant and reported that last year 30 per cent of the Studebaker production was closed jobs, the division being 50 per cent of the Big Six, 20 per cent on the Special Six and 20 per cent on the Light Six. If necessary the corporation can make 40 per cent of this year's output closed jobs.

"I won't promise you any changes in construction in the 1924 cars as they now stand, but changes will be made as required," said Mr. Wollering.

### CHARLES W. WRIGHT DEAD

MOLINE, ILL., Jan. 14—Charles W. Wright, organizer of the Moline Body Corp. and until his retirement a few years ago in charge of the Banner Buggy Co. in St. Louis, died at his home here. He was seventy-four years old. Mr. Wright was a superintendent in the Sechler Carriage Co. until 1902, when he organized the Wright Body Co., now the Moline Body, and was active in its management for years.



## South Africa Leans Toward Car Buying

Popularity of Motorcycle Is on  
Decline, People Preferring  
Automobiles

JOHANNESBURG, SOUTH AFRICA, Dec. 17 (by mail)—At the end of 1923 it will probably be found that over 5000 cars have come into South Africa. It is estimated that there are now about 35,000 cars actually running throughout the Union, and this means that there is only one automobile to every forty-two white people. But the number of motorcycles in use brings this ratio to about one in twenty-three.

The motorcycle has to be counted as a motor vehicle here, as it is used to a very great extent in town and country. It is, however, declining in popularity, and people are buying cars rather than the very large and high powered motorcycles. That is why the British motorcycles are making such headway. The British manufacturers specialize in the production of motorcycles of about 2½ hp.

The engines in some cases have overhead valves and give wonderful power output for their cubic capacity.

### Motor Vehicle to 15 People

In the city of Johannesburg, the largest in the country, there is a motor vehicle, counting motorcycles, to every fifteen people, which speaks well for the energy of the industry in this center.

While a large number of the motorcyclists will become motorists soon, it will be some time before the number or proportion of motorcycles to cars dwindles noticeably. It is estimated conservatively that the city can take another 3000 cars within two or three years, beside the vehicles need for replacement.

Traffic control is being carried out better now, and the police are endeavoring to get the municipality to cooperate in getting some order on the footwalks. In Johannesburg and the other South African cities pedestrians walk just where they please and when they please. They are supposed to keep to the left of the footwalk, but the great majority do not even know that such a rule exists.

### Pedestrians Show Recklessness

They step off the pavement with the confidence of armored tanks and travel at any angle across busy streets, without thought of the hospital. The seriousness of the position and the relation of pedestrian traffic to the street traffic is fully realized by the police, who are doing their best, in the absence of municipal support, to cope with the matter.

The trouble in most South African cities is that the municipalities are too busy with politics to worry about traffic, and it is only since the South African Motor Traders Association and the various automobile clubs have got

together on the matter that some sort of action has been taken. The term "jay walker" is known and used here. Although the country is nowhere near the much talked of saturation point, the condition of traffic soon may make itself felt in a slackening down of car sales.

The new Buick has arrived. It has been shown formally to the public and created a stir in all the towns. Four-wheel brakes are considered to be an asset here, for there are hills and bad roads. Arthur Williams, General Motors representative, has just completed a tour of over 2000 miles at the wheel of one of the 1924 Buick "Six" models over representative South African roads in three of the four provinces of the Union.

He states that the four-wheel brakes and extra power of the engine made country travel easier. This trip was part of the campaign to advertise the new Buick and was a fitting conclusion to the finest car advertising stunt on a new model that has been put across in Johannesburg.

Connock's S. A. Motor Co. was responsible for most of the advertising ideas, with the exception of the tour which was organized by General Motors Export Co. Up to the present the 1924 models that have arrived are the Fiat, Buick, Chevrolet and Overland. The Oakland and the Cadillac are expected within a few weeks.

The good roads movement is going along well.

## Charles M. Schwab Shows Deep Interest in Stutz

NEW YORK, Jan. 14—Stutz dealers at the annual show week dinner heard Charles M. Schwab, chairman of the board, declare his intention to make his participation in the automotive industry the crowning event of his long and varied business and financial career. From this time on, he said, the industry, and Stutz Motor Car Co. especially would occupy an important and permanent place in his activities.

The company, Mr. Schwab said, would be placed in the strongest financial position and would be able to compete equally with all companies. No effort would be spared, he declared, to bring the company to the forefront of the industry, and it was prepared to make any sacrifices that were necessary to accomplish this.

### Stutz Not Basis for Merger

NEW YORK, Jan. 15—When Charles M. Schwab prescribed mergers as a way to cutting down the high cost of merchandising motor cars at the banquet of the National Automobile Chamber of Commerce last week, some thought to interpret this as hinting as a possible big consolidation in the making, built around the Stutz. This, however, is denied by the steel magnate, who, before sailing for Europe Saturday, declared that he was speaking only in general terms.

"The Stutz property is too small to use as a nucleus for a merger," he declared.

## Chevrolet Stocking Cars in Wilmington

Stores Will Be Used to Meet  
Needs of Delaware and  
Eastern Pennsylvania

WILMINGTON, DEL., Jan. 15—Chevrolet cars to the value of \$1,500,000 are being stored at the new Wilmington Marine Terminal, for distribution throughout Delaware and eastern Pennsylvania when the spring season opens.

This has been made possible because of the fact that in building the terminal, which has just been completed, arrangements were made to meet future shipping needs. This gives much larger warehouse facilities than are needed just at this time in connection with the terminal's shipping business.

The cars, 2100 of them, are coming direct from the plant at Tarrytown, N. Y. There are 1000 phaetons and 1100 closed models, of which 800 are sedans and 300 coupés.

The plan of utilizing the extra storage space at the terminal was decided upon by the Chevrolet management to offset the delays otherwise incident to the effort to rush orders to the territory indicated with the coming of spring. All the automobiles will be delivered to dealers and customers under their own power.

The warehouses are fireproof, roomy and equipped with the latest loading and unloading machinery. The terminal is at the head of deep water in the Delaware River, being the port of Wilmington, where ocean-going traffic is handled. Several lines of steamers operate from the terminal.

## Sloan Expects This Year Will Be as Good as Last

NEW YORK, Jan. 15—Confidence in the bright prospects for business in 1924 and a plea for cooperation among dealers in the various General Motors lines were high spots in the speech of Alfred P. Sloan, Jr., president of the General Motors Corp. at the Oldsmobile dealers' banquet show week. Mr. Sloan predicted that 1924 would be at least as good a year as the banner year of 1923.

A. B. C. Hardy, president of the Olds Motor Works, told of the plans and preparations for stepping up production on the new "Six" to 12,000 cars a month by April, with 15,000 a month the goal. The plant will be running twenty-four hours a day within 30 days, Mr. Hardy said.

### TITAN TRUCK RECEIVER

MILWAUKEE, Jan. 14—Upon the application of the Western Metal Specialty Co., the Milwaukee County Circuit Court has appointed Julius J. Goetz receiver of the Titan Truck Co., Milwaukee, manufacturing the Titan motor truck. Creditors have been notified to file claims within six months from Jan. 8, 1924.

## Armory Pleases All for New York Show

Likely That It Will Be Used for  
National Exhibits in Suc-  
ceeding Years

NEW YORK, Jan. 14—The Bronx Armory will continue to house the annual New York show for at least several years. While no official action on the part of the Show Committee of the National Automobile Chamber of Commerce may be looked for at the present time, the consensus of opinion among the leading members of the Chamber is that the wisdom of the radical switch from the Grand Central Palace has been vindicated by the success of the show, which closed its doors on Saturday night.

The week ended with everyone satisfied with results, both in the matter of public support, dealer attendance and sales, and Show Manager S. A. Miles left for Chicago, to prepare for the second national show, which opens Jan. 26, confident that the industry is well satisfied with New York results and that the Bronx Armory will become the permanent home of the New York show.

### Evening Crowds Best

Afternoon crowds during the week were lighter than in the corresponding time at the Palace last year, but at night the crowds were unquestionably greater.

While there has been no check-up as yet as to dealer attendance, it is said that the retailers were just as numerous this time as a year ago, and furthermore that they visited the show, as a rule, several times during the week, despite the distance they had to travel.

"A national show in the Bronx—away from the center of Manhattan—was an experiment," said Mr. Miles before he left for Chicago, "and until it was actually opened there was doubt as to its ultimate success. The public and the exhibitors alike have been entirely pleased with the new location.

"The armory has done away with congestion, the exhibitors have all had an equal opportunity in being on one floor; visitors have found greater satisfaction in making comparisons of the new cars, and everyone has thoroughly enjoyed the wonderful view from the galleries."

## Schedules Increased as Outcome of Show

(Continued from page 148)

The farm market looms as one of the strongest for sales of automobiles this year, and manufacturers will devote themselves more aggressively than heretofore in promoting selling campaigns in rural and agricultural districts. While business in those regions held up remarkably well during the past year, in view of conditions it is believed that this year will see more

pronounced evidence given by farmers to make purchases.

This will affect trucks as well as automobiles, and truck builders are prepared to meet the improved conditions. Truck building has progressed along conservative channels, stocks of finished vehicles being kept at a minimum and production following the course of actual demand.

## FINANCIAL NOTES

Jordan Motor Car Co. will issue subscription warrants to common stockholders of record Jan. 17, entitling them on or before Feb. 16 to subscribe to 42,000 shares of new common stock at \$30 a share on the basis of three and one half new shares for each old share.

Hupp Motor Car Co. stockholders are reported to have exercised their rights to subscribe to approximately 90 per cent of the additional 342,678 shares offered at \$12.50, leaving only approximately 50,000 shares for the underwriting syndicate to take up.

## Hearings on Excise Tax Repeal Bills Commence

(Continued from page 152)

for taxes for sales made on a non-taxable basis for the past eighteen months, with the result that confusion and expense has ensued and created an impossible situation."

The hearings will continue through the rest of this week, and additional arguments will be presented by the American Automobile Association, the National Automobile Dealers Association, the Rubber Association of America, the Automotive Equipment Association, all of whom have asked that they be heard on the question.

Because of a crowded program today, the Automobile Body Builders Association, the Electric Auto-Lite Corp. and the Fiske Rubber Co., all of whom were scheduled to be heard, were postponed until late in the week.

Following the introduction of testimony by all of the allied associations of the automotive industry, Congressman Clancy will be given an opportunity to sum up before the committee.

In discussing the measures introduced by him, Mr. Clancy expressed a strong conviction that the time was propitious for the repeal of these taxes and predicted that at least a part of them would be repealed.

## TIMBERLAKE TRUCK RECEIVER

ST. LOUIS, Jan. 16—A receiver has been appointed for the Universal Motor Truck & Traction Engine Co. on the application of stockholders who complain that the company has done nothing since 1911. The company was incorporated in that year with an authorized capital of \$250,000 to manufacture the Timberlake four-wheel drive motor truck.

## BANK CREDITS

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co., second largest bank in America.

Business last week showed definite signs of revival from the holiday recession. Commodity prices moved irregularly, while stock quotations were generally higher until the sharp reaction on Monday of this week.

Production of steel ingots in December amounted to 2,843,764 gross tons, comparing with 3,113,804 tons in November and 3,300,416 in December, 1922. The daily rate of 2,843,764 tons marked a decline of 6011 from November. The year's output of 43,226,955 tons compared with 34,568,418 in 1922, and was second only to the record of 43,619,200 tons established in 1917. Unfilled orders on the books of the United States Steel Corp. totaled 4,445,339 tons on Dec. 31, compared with 4,368,584 at the end of November. This increase followed eight consecutive monthly declines.

## Petroleum Output Declines

Production of crude petroleum in the week ended Jan. 5 averaged 1,884,050 barrels a day, as compared with 1,927,750 in the preceding week, and 1,752,500 in the corresponding week last year. The total output in 1923 is estimated at 745,000,000 barrels, a new high record, 34 per cent in excess of the 1922 total.

The money supply of the country on Jan. 1 amounted to \$8,977,466,356, as against \$8,614,433,297 at the beginning of 1923. The amount of gold increased \$313,725,246 during the year, silver dollars \$56,628,365, and Federal Reserve notes \$5,135,405. The amount of money in actual circulation on Jan. 1, outside of the Treasury and the Federal Reserve, was \$4,951,085,383.

Fisher's index of wholesale prices stood unchanged at 150.9 last week, as against 151 two weeks before. Bradstreet's wholesale index was 132.710 on Jan. 1, showing a decline of 1.2 per cent during December and a decline of 3.1 per cent for the year.

Discounts by Federal Reserve banks declined \$191,000,000 during the week ended Jan. 9, while purchased bills declined \$28,000,000 and Government securities \$26,300,000.

## Loans Increased

Loans of reporting member banks increased \$133,000,000 during the week ended Jan. 2, increases of \$172,000,000 in loans secured by stocks and bonds, and of \$11,000,000 in loans secured by Government obligations, being combined with a decline of \$50,000,000 in "all other" loans. Net demand deposits increased \$404,000,000 and time deposits \$32,000,000, while accommodation at Federal Reserve banks declined \$41,000,000.

Call loan rates continued to decline last week, ranging from 4% to 3% per cent, but revived to 4½ on Monday of this week. Time money continued to move generally at 5 per cent, easing off to 4% on Monday.



## Foreign Tariffs Cut U. S. Overseas Trade

But A. L. Haskell Believes That  
These Barriers Will Be Over-  
come in Time

NEW YORK, Jan. 15.—Pointing out that in the first ten months of 1923 at least 300,000 cars were shipped overseas from the United States and Canada, either as complete units or for assembly in American-owned foreign plants, A. L. Haskell, vice-president and general manager of the General Motors Export Co., expresses his belief that the time is not far off when those foreign countries which have set up high motor car tariff barriers will find that somehow their commercial life is not keeping pace with their neighbors.

These tariff barriers are held to be one of the factors that retard the expansion of automobile export business, but Mr. Haskell is firmly convinced that it will not be long before the demand for American cars abroad will be so great that even tariff walls cannot slow the business.

### Bankers Too Conservative

Mr. Haskell says further concerning foreign conditions:

Another factor which tends to retard the use of motor cars abroad is the extreme conservative attitude taken by the banks in certain territories. Obviously there are certain capital requirements for automobile distribution and without the whole-hearted cooperation of the local banks, the distribution volume of any distributor is bound to be limited.

I believe that one of the steps which must be pushed today, if we are to expand our foreign motor car markets, is systematically to educate and sell every foreign bank and most particularly those great branch banking systems with head offices in Europe, on the safety and profitability of merchandising a good sound motor vehicle, be it American or be it European.

### Australia Best Market

In the territory controlled by this company, Australia stands preeminent as the best market, practically equalling the volume of General Motors products imported into England by General Motors, Ltd., another subsidiary of General Motors, with headquarters in London, Argentina, New Zealand, Sweden, Dutch East Indies, British India and British South Africa occupy in turn the next most prominent positions.

Exports of General Motors products during 1923 to Australia increased 120 per cent from the previous year, those to New Zealand 300 per cent, to Sweden well over 200 per cent, to British South Africa over 175 per cent and to British India over 150 per cent.

The outlook for 1924 is quite promising. In Australia, all signs point to a continuation of the prosperity which business there is now enjoying. Crops, which control business there to a great extent, are reported to be in excellent shape, and prices are expected to be good, with consequent easy money.

As regards Europe it is obvious that any very marked improvement in the automobile markets there, outside of the Scandinavian

countries, in which motor car sales have been consistently good, will be dependent largely on a settlement of the political differences now existing. That improvement, once under way, will be rapid, since even now there are indications that motor car markets in the Central European countries are opening up and a revival of interest is becoming apparent. Even in spite of severe handicaps of depreciation of currency and fluctuations in exchange, the prospects are that some improvements in sales will be noticed.

South Africa has taken cars during the last year at a rate which has surpassed the hopes of even the most sanguine because business in general there has been anything but good. There are no indications that there will be any change for the worse in business conditions and the volume of sales by American motor car manufacturers in that territory should continue to be satisfactory.

There is every reason to believe that the sale of motor cars in Asia will be much larger in 1924 than in 1923. In India business remains good, crops are satisfactory and money is easy. In addition, China offers perhaps one of the best potential markets in that part of the world. The development of this market will necessarily be slow and dependent on a number of factors, but it should be none the less sure.

The earthquake disaster which occurred in Japan in September has acted as a stimulus to the sales of motor vehicles and the prospects are that during the early part of 1924 the shipments of motor cars and trucks will be much above normal.

## INDUSTRIAL NOTES

Gray Auto Equipment Co., Oakland, Cal., has been incorporated with a capital of \$150,000 by officials of the Oakland Machinery Co. to manufacture automobile bumpers, luggage carriers and other accessories, which, prior to this time, have been handled as a side line by the Oakland Machinery Co. Arrangements have been made with the Judson Iron Works to install special rollers to roll spring steel here for the new equipment company.

American Coil Spring Co., whose customers are numbered among automobile manufacturers, dealers and repair men, has leased space in the Central District warehouse of the Edgar T. Ward's Sons Co., 1455 West Thirty-seventh Street, Chicago, and installed factory equipment. Albert H. Bitzer is president and general manager of the company; Edward W. Bitzer, secretary and treasurer, and P. F. Stephens, vice-president.

Milwaukee Die Casting Co., Milwaukee, has increased its authorized capitalization to \$50,000 common and \$150,000 preferred stock, in order to accommodate the rapid increase in its business and provide for future expansion of production. The concern manufactures die cast engine bearings as well as other metal products for the automotive industries.

Hodgman Rubber Co. of New York has opened an office at 2284 West Euclid Avenue, Detroit, in charge of Stephen A. Douglas. The company plans to merchandise its Hodgman top material in a large way to vehicle manufacturers.

Master Auto Body Co. is the new title selected by the Benzick-Schulmer Body Corp. of Milwaukee, which has recently filed amendments to its articles to provide for the change in corporate style.

## METAL MARKETS

Outwardly the market for steel products reflects nothing but sameness, and yet the close observer senses a somewhat changed atmosphere, confidence on the part of producers that a sellers' market is in the offing becoming more and more evident. Demand need not necessarily display a spectacular uptrend to bring about such a condition. Plant operations are at a rate of about two-thirds of capacity for the entire industry, and orders on books together with the business now coming in day by day assures the absorption of output at this rate over the next two months. A broadening of the demand, the nearer spring approaches must be looked for, barring unforeseen developments.

If this broader inquiry comes upon a market in which there is a nip-and-tuck fit between demand and supply by reason of a curtailed rate of production, very little in the way of "bunched" buying will suffice to turn the market's scales against the consumer. Anticipation of this condition may be reflected in the market's tone long before its actual appearance. Producers are beginning to talk openly about their expectation of "as great a shortage of finished steel next spring as there was during the same period in 1923." The probabilities are that an upward price movement, if one does ensue, will be kept well within bounds of reason.

The policy of the dominant market interest, conservative at all times, is now more than ever one of letting well enough alone. Besides, the year-end inventory of increased plant facilities shows that some advance has been made toward satisfying the automotive industries' special steel requirements more adequately than heretofore. Certain, however, is the total absence at this time of any factor that might give hope to those who look for a decline in steel prices in the near future. It would seem, therefore, that with the risk of a price decline over the next few months virtually eliminated, steel buyers could so arrange their commitments as to prevent their being caught in a squeeze which can only materialize if there ensues a sudden avalanche of orders due, in turn, to consumers playing too close to the cushion in anticipating their requirements. It will be upon the sagacious apportionment by buyers of orders over as long a delivery period as possible that the sort of a sellers' market which some producers proclaim as being near, depends to a large extent.

**Pig Iron.**—Fresh buying by automotive foundries is still largely of single car proportions, although the market's undertone appears to have slightly improved. In most of the Middle West markets 50 cents more is being asked for malleable.

**Aluminum.**—Importers' order books show few blank spaces and the preponderating portion of the metal allotted to the United States by European producers for the first half of the year has been sold. What little metal is still available for first half deliveries, seemingly awaits buyers who are willing to pay a slight premium over what is commonly accepted to be the domestic producer's price.

**Copper.**—The American Brass Co. issued a few days ago new price lists. Most copper and brass products show a reduction of 1/2 cent per lb. Copper wire was reduced 1/2 cent to 15 1/4 cents per lb. and seamless copper tubing was marked down 1 cent. The copper ingot market continues frail with buyers apathetic, although further declines seem almost out of the question.

# Calendar

## SHOWS

Jan. 26-Feb. 2—Chicago, Annual Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Coliseum and First Regiment Armory.

Jan. 26-Feb. 2—Chicago, Annual Automobile Salon, Hotel Drake.

Feb. 4-9—Chicago, Tenth Annual National Motorcycle, Bicycle and Accessory Show, Broadway Armory, under the auspices of the Motorcycle and Allied Trades Association, A. B. Coffman, secretary.

## FOREIGN SHOWS

April 2-13—Barcelona, Automobile Exposition, under the auspices of the Confederacion de Camaras Sindicales Espanolas del Automovillismo y Ciclismo, Palacio de Arte Moderno.

Aug. 23-Sept. 6—Toronto, Ont., National Automobile Show in conjunction with the Canadian National Exhibition under the sanction of the Canadian Automotive Equipment Association and the Automotive Industries of Canada.

## RACES

Aug. 3—Lyons, France, European Grand Prix.

April 27—Trapani, Italy, International Automobile Race.

## CONVENTIONS

Jan. 30-31—Chicago, Fourth Annual Meeting of the Automotive Electric Service Association, Congress Hotel.

Jan. 31-Feb. 1—Rochester, N.Y., Winter Sectional meeting of the American Society for Steel Treating, Hotel Seneca. W. H. Eisenman, secretary, 4600 Prospect Avenue, Cleveland.

May 21-24—Detroit, International Motor Transport Congress under the auspices of the National Automobile Chamber of Commerce.

June—Washington, Pan American Highway Congress, under the auspices of the Pan American Highway Mission.

## S. A. E. MEETINGS

January—The following sections will not hold meetings in January but will concentrate on the annual meeting of the Society in Detroit, Jan. 22-25: Cleveland, Detroit, Metropolitan, Mid-West, Washington and the proposed Milwaukee Section.

Jan. 22—Dayton Section, Research in Improving Handling and Utilizing Rubber Latex. B. J. Lemon, Day-

ton Engineers Club, 8 p.m. Dinner 6.30 p.m.

Jan. 22-25—Annual Meeting of the S. A. E.—Detroit.

Jan. 23—"The Carnival," Oriole Terrace, Detroit, 9 p.m.

Feb. 4—Buffalo Section, Engines for Oil vs. Oil for Engines, L. H. Pomeroy, A. Ludlow Clayden, Statler Hotel, Buffalo, 8 p.m.

Feb. 14—Indiana Section, Motor Tests and Research Work, C. P. Grimes, Hotel Severin, Indianapolis, 8 p.m. Dinner 6.30 p.m.

Feb. 14—Metropolitan Section, Vehicle Depreciation.

March 13—Metropolitan Section, Replacement Parts and Accessories.

April 17—Metropolitan Section, Fleet Maintenance, F. W. Winchester.

May 15—Metropolitan Section, What Roads and Steels Do to Automobiles.

## Underwriters Extend Application of Rates

NEW YORK, Jan. 14—Revision of the rates and rules for automobile accident insurance by the National Bureau of Casualty and Surety Underwriters has not only brought about lower rates, but also gives insurance protection to all the persons who may at different times drive any one car, the same rate applying whether the car is used for business purposes or for pleasure only. Heretofore, an owner, in order to secure the lowest possible rate, had to agree to use his car for pleasure only and then drive the vehicle himself.

The new schedule of rates shows an average reduction of 6 per cent in the rates for public liability insurance for the country as a whole and reductions as high as 20 per cent in some cities. There has been a slight increase in the rates for property damage insurance, however.

Experts who gathered the data for the rate revision found that in the cities of medium size and in the rural districts of the South and Far West there has been the greatest reduction in motor vehicle accidents in recent years. The new schedule, therefore, shows that the highest rates for public liability insurance must be paid by owners in New York City, with Buffalo, Philadelphia, Boston, Jersey City, Cleveland, Providence, St. Louis, Chicago, Pittsburgh, Albany, N. Y., Syracuse, N. Y., Rochester, N. Y., and Youngstown, Ohio, following in the order named.

## CITY TO BUY EQUIPMENT

MILWAUKEE, Jan. 14—Roland E. Stoelting, commissioner of public works, City Hall, Milwaukee, has requested the common council to grant permission to purchase in the open market, without intervention of competitive bidding, a considerable list of equipment for the department of public works. The items

include fourteen roadsters, one coupé, one sedan, two 1-ton trucks, two 5-ton trucks, fourteen 5-ton tractor trucks, eight trailers, two 5-ton caterpillar tractors, two snow-loading trailers, one road repair outfit, one road grader, one 12-ton 3-wheel roller, one 8-ton tandem roller, one street sweeper with broom, two snow plow attachments and one snow broom, one 3-ton tandem roller and other items.

## Lawrence Sperry's Body Found Off English Coast

NEW YORK, Jan. 14—The mystery surrounding the disappearance of Lawrence Sperry, whose plane was lost in the English Channel on Dec. 13, has been ended through the washing up of his body by the sea, between Dungeness and Rye, in Sussex.

Mr. Sperry lost his life in an attempted flight in his flivver plane from England to Holland.

One of the pioneers of aviation, Mr. Sperry had a spectacular career and to him is accredited the glory of being the first to take a woman passenger aloft over New York City and the Statue of Liberty, first to loop the loop in a hydroplane, first to land in city streets and first to experiment in night flying.

## Entry Blanks Sent Out for Indianapolis Race

INDIANAPOLIS, Jan. 15—Entry blanks have been issued for the twelfth annual 500-mile race, which will be run on the local speedway May 30. The 1924 race will be the second for the 122 cu. in. class.

The weight stipulations are the same as in 1923, a minimum of 1400 lb. for 122 cu. in. cars and 1200 lb. for engines of 91 cu. in. or less.

Again the single-seater car will be in evidence, while the speed requirements for qualifying call for an average of 80 m.p.h. or more for four laps of the track, or ten miles. Entries close May 1.

## Many Workers Shown with Poor Eyesight

NEW YORK, Jan. 16—The Eye Sight Conservation Council of America, which is conducting a survey of eyesight conditions among the nation's industries, estimates that there are 25,000,000 gainfully employed Americans suffering from defective vision, to which it attributes great waste in industry. Of this total there are 29,000 Ford workers with defective vision, as reported to the council by the Ford Motor Co., which conducted an investigation itself.

In its report, the Ford company says:

The present number of employees for the Ford Motor Co. at Detroit is 65,000. Of this number 60,000 have received eye examinations. The company first started to make tests for sight in 1912.

The results of even superficial tests of this sort show an amazingly high proportion of industrial workers having defective vision. Of the 60,000 persons who received eye examinations, 31,000 were found to have normal vision, so almost half of this group of workers had visions below normal. Although very high, the percentage of defective vision would still be higher if more complete eye examinations were made. It is not considered necessary to do this except in special cases.

## Job Analysis Made

All employees with poor vision are placed on jobs where there is no risk of injury or other conditions that would make his eyesight worse. A careful job analysis has been made throughout the plant for the purpose of determining what jobs are suitable for those with poor eyesight. The results of this study have made possible the employment of twelve totally blind persons in jobs suitable to their conditions. There are 207 persons who are blind in one eye, and 253 with light perception in one eye, in the employ of the company.

The eye department of the company is unusually active and attentive to all major and minor injuries and complaints. In May, 1922, there were 11,602 reported treatments of eye cases, marking the largest monthly total in the history of the company.